

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

CENTRAL ILLINOIS LIGHT COMPANY,)	
d/b/a Ameren CILCO)	ICC Docket No. 06-0070
)	
Proposed General Increase For Delivery Services)	
)	
)	
CENTRAL ILLINOIS PUBLIC SERVICES)	
COMPANY,)	
d/b/a AmerenCIPS)	ICC Docket No. 06-0071
)	
Proposed General Increase For Delivery Services)	
)	
ILLINOIS POWER COMPANY,)	
d/b/a AmerenIP)	ICC Docket No. 06-0072
)	
Proposed General Increase For Delivery Services)	(consolidated)

**DIRECT TESTIMONY OF EDWARD C. BODMER
ON BEHALF OF THE CITIZENS UTILITY BOARD**

CORRECTED CUB EXHIBIT 1.0

April 26, 2006

(Revised July 18, 2006)

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EDWARD C. BODMER**

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EXHIBITS

1.01	COST OF EQUITY CAPITAL (REVISED)
1.02	COST OF EQUITY SENSITIVITY ANALYSIS (REVISED)

1 **DOCKET NO. 06-0070(cons.)**
2 **BEFORE THE ILLINOIS COMMERCE COMMISSION**
3 **DIRECT TESTIMONY OF EDWARD C. BODMER**
4 **ON BEHALF OF THE CITIZENS UTILITY BOARD**
5

6 **I. QUALIFICATIONS AND SUMMARY OF RECOMMENDATIONS**
7

8 **Q. Please state your name and business address.**

9 A. My name is Edward C. Bodmer. My business address is 5951 Oakwood Dr.
10 Lisle, Illinois, 60532.
11

12 **Q. On whose behalf are you testifying?**

13 A. I am testifying on behalf of the Citizens Utility Board (“CUB”).
14

15 **Q. What is your present occupation?**

16 A. I am a consultant specializing in utility regulation among other activities.
17

18 **Q. What is the purpose of your testimony?**

19 A. The purpose of my testimony is to present an analysis of issues related to
20 AmerenCILCO, AmerenCIPS, and AmerenIP’s (collectively “the Ameren
21 companies”) cost of equity capital, cost of debt capital and each company’s
22 capital structure. This testimony also contains my recommendation as to the
23 appropriate overall rate of return to apply to each of the Ameren companies’ rate
24 base.
25

26 **Q. Please summarize your educational background and professional experience.**

27 A. I received a B.S. degree in Finance with highest honors from the University of
28 Illinois in 1979 and an MBA degree with honors from the University of Chicago
29 in 1986. My regulatory experience began with my employment on the
30 Accounting and Finance Staff of the Illinois Commerce Commission
31 (“Commission”) and has encompassed numerous assignments on regulatory
32 issues as a consultant. In a past position as a Vice President at the First National

33 Bank of Chicago, I managed the credit analysis of energy loans, which included
34 evaluation of electric and gas utility company transactions. In that position I also
35 directed a number of energy-related financial advice projects for bank clients.

36
37 Since 1989, I have developed a consulting practice in the electric utility industry,
38 which has involved assignments for financial institutions, utility companies, and
39 government agencies. My projects have addressed a variety of topics, including
40 industry re-structuring, valuation, forecasting, pricing, resource planning, and
41 performance evaluation. As part of my consulting business, I have presented
42 testimony before this Commission and regulatory commissions in California,
43 Indiana, Kansas, Michigan, Maine, Minnesota, Vermont and Connecticut on a
44 wide range of subjects.

45
46 Another component of my practice is teaching professional development courses
47 on valuation, project finance, credit analysis, financial modeling, and corporate
48 finance. I have developed outlines, materials and case studies and taught courses
49 in South America, Asia, Australia, Western Europe, Eastern Europe, the Middle
50 East, and Africa as well as in the U.S. My work has included workshops open to
51 the public, which I prepared for firms that arrange courses including Infocast,
52 Euromoney, Terrapin, the Amsterdam Institute of Finance, the Financial Training
53 Company and the New York Institute of Finance. In addition, I have taught many
54 customized in-house courses tailored to specific institutions. These companies
55 have included HSBC (Hong Kong), ABN Amaro (Sao Palo), Citibank (Tokyo),
56 Development Bank Singapore, CIMB (Malaysia), Lindlakers (London), Saudi
57 Aramco, the Korean Power Exchange, Indonesia Power, UAE Offsets Group and
58 others.

59
60 **Q. Do you have experience with Illinois regulation?**

61 A. Yes. I have a general familiarity with the utility companies in Illinois from my
62 work on the Commission Staff in the late 1970's and the 1980's. In the context of
63 subsequent consulting assignments, I have analyzed rate and financial issues

64 related to utility companies in Illinois on a number of occasions. My projects
65 have included: testimony on recovery of decommissioning costs; testimony in
66 ComEd's three delivery service cases; testimony on State-wide uniform tariffs;
67 testimony on cost of service and rate design in ComEd's 1994 rate case; analysis
68 on behalf of the Suburban Councils of Government with respect to
69 implementation of the Infrastructure Maintenance Fee and the Municipal Utility
70 Tax; development of analyses to support the City of Chicago's franchise
71 negotiations with Edison in 1990 and 1991; testimony on behalf of the Illinois
72 Attorney General, the Cook County State's Attorney and the Governor of Illinois
73 on costs and benefits of ComEd's proposed spin-off of nuclear plants; and
74 analysis of electricity legislative options on behalf of the Local Government
75 Electric Power Alliance¹.

76
77 **Q. Describe your experience with respect to analysis of the cost of capital?**

78 A. The first time I ever delivered testimony for the ICC Staff was in 1980. The
79 testimony involved measuring the cost of capital for Union Electric. Later, as an
80 employee of the Accounts and Finance Department at the ICC, I testified on many
81 issues related to the financial justification for rate increases concerning Illinois
82 Power and ComEd. This work included analysis of the appropriate level of
83 construction work in progress to include in Illinois Power's rate base while it was
84 in the midst of its nuclear construction program. More recently, I have testified
85 on the issue of ComEd's cost of capital in docket no. 05-0597.

86
87 I have also been asked to speak on the cost of capital applicable to electricity
88 generation at conferences and I have written on problems with using the Capital
89 Asset Pricing Model ("CAPM") in measuring the cost of capital for electric
90 generation investments. As part of the courses mentioned above, I regularly
91 include lectures on valuation and cost of capital. Finally, in various assignments

¹ The Alliance includes the Chicago Transit Authority ("CTA"), the Chicago School Board, the Chicago Park District, the Chicago City Colleges, and the City of Chicago.

dealing with valuation, I have reviewed the cost of capital analysis that was used in discounting cash flow.

Q. Out of the work experience you have described above, which is most relevant to the Ameren Companies' rate increase case?

A. The assignment with the most direct bearing to estimation of Ameren Companies' cost of capital is the on-going ComEd delivery services case. Both ComEd and the Ameren companies face much lower operating risk, especially at the beginning of 2007, when the current delivery cases will affect rates for customers. This is due primarily to the energy procurement process that has been approved for these companies. (Even though these cases will be decided before 2007, rates for customers taking service at frozen rates will not change until January 2007.) The reduced risk comes from: (1) no limitation on the utilities' ability to pass through whatever costs are incurred in procuring power, (2) no direct exposure to changes in the price of wholesale electric power, and (3) virtually no risk associated with the credit quality of energy suppliers or changes in the volume of energy generation. Ameren also has similar issues to ComEd related to goodwill and equity injections on its balance sheet.

Q. How did you approach the task of estimating cost of equity capital in the ComEd delivery services case?

A. I provided the Commission with a commercial perspective to measurement of the cost of capital using information from information published by three leading investment banks. This information was published in reports valuing the multibillion-dollar transaction between PSEG and Exelon. The availability of these reports provided direct rather than indirect evidence of the rate of return that investors require. My testimony in the ComEd case verified that when investment banks value cash flow, they use a cost of equity that is typically 300 basis points, or more, less than the 11% proposed by ComEd. I argued that the Commission should make use of practical and direct evidence available from actual transactions, over the indirect information generated by theoretical models such as

the DCF model, that rely on subjective judgments by analysts. Part of the reason I advocated that the Commission make use of the direct information from investment banks was that in valuing a merger transaction rather than in promoting increased ratepayer prices, the investment banks do not have an incentive to over-estimate the cost of capital as do the Ameren companies in this case.

Q. Have you reviewed the testimony of Ms. McShane supporting Ameren Companies' proposed rate of return on equity? If so, what is your opinion of it?

A. Yes. My review of Ms. McShane's analysis demonstrates how difficult it is to support her estimated cost of equity of 11-12.5% using current financial data. Numerous flaws in her discounted dividend model, her application of CAPM, and her risk premium analysis reflect the struggle that must be made to come up with such a high number. After reviewing her testimony I conclude that each of her analytical approaches that supposedly measure the cost of the Ameren companies' equity in fact overstate the number.

I focus on Ms. McShane's application of the DCF model and the CAPM and her claim that the market to book ratios for regulated utility companies should exceed 1.0 by a large margin. My analysis of her approach demonstrates that even before making adjustments for market to book ratios in excess of 1.0, her DCF model overstates the cost of equity by at least 180 basis points. The main reasons for this are: 1) her use of sell-side analyst growth rates; 2) distortions created by declining payout ratios; and 3) her selection of companies that are intended to represent the risk of a wires-only electric distribution company with virtually no commodity price risk. My analysis shows that Ms. McShane's application of the CAPM results in her overstating the cost of equity by at least 360 basis points.

She uses the parameters in her application of the model that are significantly biased upwards.

II. OVERVIEW AND SUMMARY OF RECOMMENDATIONS

Q. What are your recommendations to the Commission?

A. I recommend that the Ameren companies' cost of equity capital should be no greater than 8%. I further recommend that, consistent with standard regulatory practice, the Commission set the rate of return on equity capital equal to this 8% cost of capital. I also recommend that the Commission apply capital structure and overall returns as follows for IP, CILCO and CIPS:

	CIPS			CILCO			IP		
	Percent of Capital	Cost	Weighted Cost	Percent of Capital	Cost	Weighted Cost	Percent of Capital	Cost	Weighted Cost
Total Debt	63.00%	6.01%	3.79%	63.00%	6.62%	4.17%	60.00%	6.38%	3.83%
Preferred	4.55%	5.13%	0.23%	9.98%	5.31%	0.53%	2.05%	5.01%	0.10%
Equity	32.45%	8.00%	2.60%	27.02%	8.00%	2.16%	37.95%	8.00%	3.04%
Rate of Return			6.62%			6.86%			6.96%

Q. Summarize your primary findings with respect to the Ameren Companies' cost of capital and capital structure.

A. My principal findings are:

1. The Ameren Companies' cost of equity estimate from the DCF model is 7.93%.
2. The Ameren Companies' cost of equity measured from the CAPM is no greater than 8%.

- 175 3. Regression analysis of market to book ratios demonstrates that a return on
176 equity from 6.48% to 7.60% is consistent with a market to book ratio of
177 1.0.
- 178 4. Investment bank valuation of mergers provides direct evidence that the
179 cost of capital is 300 basis points lower than the typical 11% return
180 requested by utility companies.
- 181 5. A capital structure that removes the entire amount of goodwill from the
182 balance sheet and uses BBB cash flow ratios result in debt ratios of
183 between equity ration of 60% and 63% is appropriate for the Ameren
184 Companies.

185
186
187 **III. TESTIMONY OUTLINE**
188

189 **Q. How have you arranged the balance of your testimony?**

190 A. After describing the organization of my testimony and an overview of contextual
191 issues relevant to the case, the rest of my testimony addresses the Ameren
192 Companies' cost of equity, and each company's capital structure. My cost of
193 equity discussion begins by addressing the typical DCF and CAPM Models and
194 then describes implications of the Ameren Companies' cost of capital that can be
195 inferred from market to book ratios of regulated public utility companies. After
196 the discussion of how cost of capital can be inferred from stock market data, I
197 describe how direct evidence from investment bank reports can be used to
198 measure the Ameren Companies' cost of equity. All of my analysis demonstrates
199 that the Ameren Companies' cost of equity capital is nowhere near the 11%-
200 12.5% cost of equity estimated by the company.

201
202 The table below shows how my estimate of the Ameren Companies' cost of
203 equity compares to the estimates made by Ms. McShane. I explain below that
204 Ms. McShane's recommendation that the Commission should target a market to

book ratio of above 1.0 is nothing more than a recommendation to increase rates and to allow the companies to earn more than their cost of equity capital. I recommend that the Commission ignore Ms. McShane's attempt to simply push up the market estimates of equity costs in an effort to justify high market to book ratios.

Cost of Capital Summary		
	McShane	CUB
DCF	9.80%	7.95%
CAPM	11.60%	8.00%
Investment Banks	NA	7.75%

Q. Describe the way you have divided your remaining testimony into various sections.

A. The remainder of my testimony explains the basis of my rate of return recommendation. The testimony is organized as follows into seven additional sections:

1. Overview and Context;
2. Estimation of the Ameren Companies' cost of equity capital using the dividend discount model (DCF);
3. Estimation of the Ameren Companies' cost of equity capital using the CAPM;
4. Verification of cost of capital estimates using market to book ratio analysis;
5. Verification of the Ameren Companies' cost of equity from cost of capital presentations made by investment banks;
6. Analysis of Ameren Companies' capital structure; and

IV. OVERVIEW AND CONTEXT

239 **Q. What subjects do you discuss in this section before you work through details**
240 **of the DCF, CAPM and other models?**

241 A. In this section I begin by defining the cost of equity and the weighted average cost
242 of capital. Next, I discuss some general points related to the process of estimating
243 cost of capital in rate cases and why market to book ratios for regulated utility
244 companies have been above 1.0 for the last decade. The final part of this section
245 discusses a few of the factors that have lead to a decline in the Ameren
246 Companies' cost of equity capital since the Orders in their last delivery services
247 rate cases.

248
249 *a. Weighted Average Cost of Capital*
250

251 **Q. What is the weighted average cost of capital for the Ameren Companies?**

252 A. The *weighted average cost of capital* for the Ameren Companies is the average of
253 two components: the *cost of debt capital* and the *cost of equity capital*.

254
255 The *cost of debt capital* is an average of the stated interest rate on various
256 outstanding loans for each Company.

257
258 The *cost of equity capital* is the minimum rate of return that investors in a stock
259 with similar risks to the Ameren Companies would require in order to make an
260 investment in that stock. Unlike the cost of debt capital, the cost of equity capital
261 cannot be directly observed in loan agreements or bond prospectuses. Instead, the
262 cost of equity capital is usually determined indirectly through applying an
263 analytical model to stock market data.

264
265 The *weighted average cost of capital* is an average of the debt and equity cost,
266 where weights depend on the proportion of debt and equity on the balance sheet at
267 book values. If goodwill is present on the balance sheet, the goodwill should be

deducted from the balance of equity capital in computing the capital structure proportions.

Q. How can one determine whether the rate of return in fact equals the cost of equity capital for a regulated utility company?

A. As stated above, the cost of equity capital is the minimum rate of return that investors require in order to be indifferent between investments with similar risks. Setting the return on the original investment made by a company equal to the cost of capital is a long standing principle of regulation. This principle ensures that regulated companies can raise money for additional investments. If the return is set below the cost of capital, then the companies will have trouble financing new investment at reasonable rates. On the other hand, if the return on equity is above the cost of capital, then an uneconomic and unfair wealth transfer from ratepayers to investors is occurring.

The problem with setting the return on equity is that, unlike other components of the revenue requirement, one cannot directly observe the cost of equity component. This implies that, before the fact, we do not know if the calculated return on equity indeed corresponds to the actual cost of equity capital. However, after the fact, if prices are set according to the traditional principle of using incremental market based capital costs to determine the appropriate return on the firm's original investment, then the market capital of the firm should be about equal to the original investment. This means that observed market to book ratios of about 1.0 provide evidence that companies are earning their cost of capital.

Q. What is the implication of market to book ratios that do not equal 1.0?

A. The main implication from the fact that market to book ratios are above 1.0 for regulated utility companies is not complicated. Market to book ratios are above one when companies earn a return on their original investment that exceeds their

cost of equity capital. In the case of the Ameren companies' parent Ameren Corp, the company's market capitalization divided by the equity investment (excluding goodwill) yields a market to book ratio of 1.95. This implies that without any rate increases, the holding company is already earning more than its cost of equity capital. I explain later in my testimony that market to book ratios greater than 1.0 cannot be explained by anything other than earned returns exceeding the true cost of capital. This situation arises because returns granted by regulatory commissions remain at levels that clearly exceed market-based cost of capital calculations.

The notion that market value equals book value when the allowed returns are based on book value is described as follows by Seth Armitage:

"The allowed rate should *not* be set equal to the cost of equity, unless the potential for gain and loss is symmetric. A policy of resetting the rate to the estimated cost of equity would not, in general, be a consistent policy, ***because it would not assure that market value equals book value.*** If the cost of equity is 12 percent p.a. and the allowed range is between 8 percent and 20 percent p.a., the allowed rate would be set at less than the cost of equity, because there is more potential for upside than for downside."²

b. Market to Book Ratios and the Rate of Return Dilemma

Q. Describe the market to book and allowed return dilemma?

A. Market to book ratios of above 1.0 in the past decade reveal that utility companies have consistently earned more than their cost of capital. Given this fact, a natural question is why do regulatory commissions continue to burden ratepayers with rates that exceed the true cost of capital. This amounts to a wealth transfer from ratepayers to investors. I have named the continuance of this wealth transfer as the "market to book and rate of return dilemma".

² Armitage, S., 2005, *The Cost of Capital Intermediate Theory*, Cambridge University Press, p. 330.

328

329 **Q. Why has the market to book dilemma persisted?**

330 A. There are many powerful interests that support maintaining or increasing the rate
331 of return for utility companies all around the country. Lenders desire better bond
332 ratings, investors want higher stock prices, and managers are under intense
333 pressure to push for higher earnings. In selecting expert witnesses, it is only
334 natural that management would retain experts that support their already inflated
335 market to book ratios.

336

337 **Q. How have utility companies and the financial interests that support higher**
338 **returns been able to maintain returns above the cost of capital in regulatory**
339 **proceedings, and perpetuate the market to book dilemma?**

340 A. Given the fact that the cost of equity is an unobservable number (with the
341 exception of information provided directly from merger transactions, as described
342 below), utility companies have developed many complex arguments that
343 obfuscate the measurement of cost of capital. These arguments are driven by the
344 fact that utility companies have a powerful economic incentive to confound the
345 cost of equity analysis. I'll refer to these arguments as the gobelty-gook factor. I
346 provide a number of examples from Ms. McShane's testimony wherein she adds
347 unnecessary complexity to the analysis as illustration of the obfuscation process.

348

349 **Q. Do financial institutions and utility companies have interests in utilities**
350 **earning more than their cost of capital?**

351 A. Yes. If returns granted by commissions are above the cost of capital, utilities and
352 Wall Street interests have a strong incentive to continue making the process
353 obtuse. The more the cost of capital discussion is confused, the more
354 commissions will be reluctant to make changes that bring returns down to the
355 actual cost of capital. In short, the informational gap that exists between the true
356 cost of equity capital and the evidence that is presented before utility commissions
357 obfuscates the issue and results in a large degree of momentum built into the

process. The end result is that market to book ratios significantly above 1.0 persist.

Q. How does the difficulty in wading through complex issues to select an unobservable number affect the regulatory decision making process?

A. Cost of capital discussions in rate cases are unfortunately quite esoteric – issues include adjustments to beta for mean reversion, quarterly versus annual discounting in the DCF model, complex statistical research on equity risk premiums, questions about inflation risk in long-term bonds and so on. While interesting to some of us, I suspect that the bickering about growth rates in the DCF model and betas in the CAPM must sound like a broken record to Commissioners. In making decisions on these technical cost of capital issues, an ALJ may be of a mind to throw up his or her hands and simply make sure the final number is not too far away from the returns granted in earlier cases. This situation creates inertia in the process. Essentially, allowed returns are propped up by Commissions’ reluctance to examine objective (but complex) evidence that suggests that regulatory cost of equity decisions have consistently exceeded the true cost of equity.

c. Changes in the Cost of Equity Capital

Q. Describe changes in the cost of capital that have occurred in the past few years in the context of obfuscation in measurement of the cost of capital?

A. Obfuscation in the cost of capital discussion means that when real changes in the cost of capital occur, a long lag can persist before changes in the actual cost of capital are reflected in regulatory decisions. In the next few paragraphs I discuss examples of changes in the cost of capital from tax cuts, risk reduction, low long-term interest rates, and available information. I discuss how these changes have reduced the cost of equity capital and how authorized returns have not mirrored the changes.

388

389 **Q. Elaborate on how these changes affect the Ameren Companies' cost of**
390 **capital relative to the previous delivery service rate increase cases that were**
391 **decided in August 1999 (IP and CILCO), and December 2001 (CIPS).**

392 A. This case differs from the Ameren Companies' earlier delivery service cases
393 because of the availability of information, the passage of new income tax laws,
394 current macroeconomic conditions and changes in Ameren's corporate structure.
395 Some of the differences include:

- 396 • Reductions in the personal income tax rates on dividends and capital
397 gains, which mean that after-tax returns have increased by a
398 substantial amount for a given level of pre-tax return granted by the
399 Commission.
- 400 • Declines in the overall level of interest rates in the economy from the
401 times the earlier delivery cases were decided.
- 402 • Lower prospective business risk faced by the Ameren Companies
403 when rates become effective in this case.
- 404 • Availability of an increased body of research that demonstrates
405 upward bias in application of historic risk premiums in the CAPM and
406 an upward bias in earnings growth rate forecasts estimated by sell-side
407 analysts that are used in DCF analyses.
- 408 • Availability of published cost of capital numbers recently by
409 prominent investment banks in merger transactions such as the
410 Exelon/PSEG merger.

411

412 **Q. How does the requested return on equity and return on rate base requested**
413 **by the Ameren Companies compare to the ICC decision in the last delivery**
414 **service cases?**

415 A. IP was granted a return on equity of 10.80% in August 1999 and CILCO was
416 granted a return of 10.52% in the same month. The last delivery rate case for

CIPS resulted in a settled return on equity of 11.25%. While the absolute return on equity request of 11% versus the earlier returns granted by the ICC may appear reasonable, once changes in the federal tax law, in interest rates, in the requested capital structure and in the Ameren Companies' risk are considered, the companies are in fact requesting a much higher return than that granted in previous cases. In the paragraphs below, I elaborate on how some of the changed circumstances over the past few years should cause the ICC to grant a much lower return to the Ameren Companies than it allowed in the prior cases.

d. Tax Law Changes

Q. How have changes in the federal tax law affected the pre-tax return on equity that the ICC must determine?

A. Changes in the tax law have lowered the Ameren Companies' pre-tax cost of equity. In its rate orders, the ICC grants utility companies a pre-tax return on equity rather than an after-tax return. Investors, however, are ultimately interested in the amount of money that goes into their pockets after they pay taxes. Significant reductions in the income tax on dividends and capital gains paid by investors as a result of the Bush Administration tax law changes in 2001 and 2003 have affected the pre-tax return required by investors. These tax reductions mean that if the ICC grants the same pre-tax return to the Ameren Companies or other utility companies, it is in fact allowing investors to realize a greater after-tax rate of return.

To illustrate the effect of tax law changes, consider the example of a married couple earning \$200,000 per year. Changes in personal tax rates for this couple are summarized below:

- The marginal tax rate is 33% today, while before the passage of changes in tax laws it was 36% in 2001.
- Prior to May 2003, dividends were taxed at the ordinary income rate (33% or 36%). Now dividends are taxed at a rate of 15%.
- Long-term capital gains tax rates were taxed at 20% prior to May 2003 and are now taxed at a rate of 15%.

Ultimately the income investors derive from an investment in the Ameren Companies is derived from dividends. Using the income received from dividends to gauge the effect of the tax law changes, the after-tax return granted in the last IP case of 10.82% would have yielded this married couple an after-tax rate of return of 6.91% before 2001 -- $10.82\% \times (1 - 36\%)$. After the Bush Administration tax cuts, the couple would now earn a return of 9.18% -- $10.82\% \times (1 - 15\%)$. The increase in after-tax return of 2.27% -- 9.18% minus 6.91% -- should translate into a lower granted return on equity.

Q. Does the change in personal tax rates affect the risk premium?

A. Yes. As explained above, changes in the tax law have a clear-cut effect on the pre-tax cost of capital. While the tax rate on dividends has been halved, interest income remains taxable at the ordinary income rate. This means there is no pre-tax interest rate reduction that is analogous to the cost of equity decline. Because the equity cost declines and the interest rate does not, the premium on equity relative to debt is lower after the dividend tax cut. The required return on equity above the required return on debt is what Ms. McShane describes as the equity risk premium. To illustrate the reduction in the equity risk premium, consider an example where before the tax cut the interest rate on debt is 6% and the cost of equity is 8%, implying a pre-tax premium of 2%. At a 33% personal tax rate, the after tax premium would be 1.3% ($2\% \times (1 - 33\%)$). Holding the after-tax premium of 1.3% constant and then applying a lower dividend tax rate implies that the pre-tax premium is reduced to 1.69% as shown on the table below:

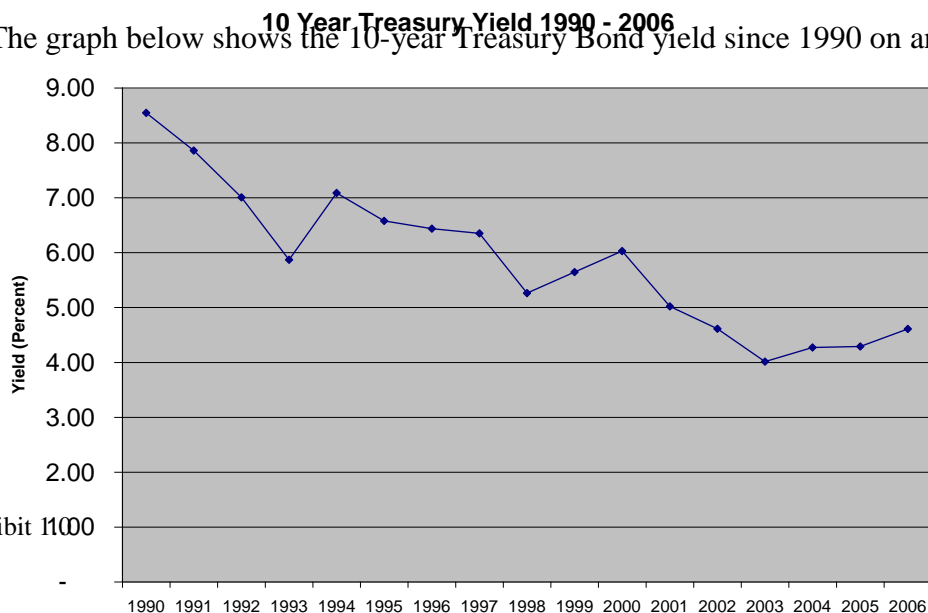
Effects of Changes in Tax Rates on Cost of Capital and Premium							
	Pre-Tax Return	Personal Tax Rate without Dividend Tax Cut	After Tax Return without Dividend Tax Cut	Personal Tax Rate with Dividend Tax Cut	Tax Return with Dividend Tax Cut	Tax Return with Dividend Tax Cut	Reduction in Pre- Tax Return from Tax Reduction
Equity	8.00%	33%	5.4%	15%	5.4%	6.31%	1.69%
Debt	6.00%	33%	4.0%	33%	4.0%	6.00%	
Premium	2.0%		1.3%		1.3%	0.31%	1.69%

Given the clear-cut effect of the reduced tax rate on the pre-tax cost of capital, one would rationally expect that authorized returns on equity should have declined after May 2003; some may suggest that utility commissions should have reduced rates for each utility in the country. However, as I have discussed, in actual regulatory proceedings consultants hired by utility companies and Wall Street interests regularly make arguments that obfuscate the effect of the reduction in tax rates. These interests regularly contend that Commissions should continue to grant returns in the 11% range. The protracted process by which regulatory commissions are reluctant to lower the allowed return to reflect after tax returns illustrates why market to book ratios are so far above 1.0.

e. Interest Rate Changes

Q. How do present interest rates compare with the interest rates that existed since the 1990's?

A. The graph below shows the 10-year Treasury Bond yield since 1990 on an annual basis. The graph d



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513 *f. Changes in Information Available Information*
514

515 **Q. Can you identify some of the additions to the cost of capital literature in the**
516 **past few years that were not available to the Commission during prior**
517 **delivery service cases?**

518 A. The cost of capital continues to be the subject of lively debate among financial
519 economists in the academic arena. Some of the work that is most pertinent for
520 rate proceedings suggest that: (1) estimating the cost of capital with a DCF model
521 and growth rate forecasts derived from sell-side investment analysts overstates the
522 required return on equity; and (2) market risk premiums used as an input to the
523 CAPM should not rely on actual realized returns such as those reported by the
524 Ibbotson study referenced by Ms. McShane. A few quotes from recent books and
525 articles demonstrate these points:

- 526
527 - **Research has been performed suggesting that if the DCF**
528 **formula is applied using analyst growth forecasts, the number**
529 **will be too high.** A study by Chan, Karceski, and Lakonishok titled,
530 “The Level and Persistence of Growth Rates,” published in 2003.
531 According to this study, analyst “*growth forecasts are overly*
532 *optimistic and add little predictive power.*”³ The overestimation of
533 growth rates made by investment analysts is noted by various
534 researchers as a factor that causes upward bias in DCF cost of capital
535 estimates. For example, in his book titled “Valuation for Mergers,

³ Chan, L., Karceski, J and Lakonishok, J, 2003, The Level and Persistence of Growth Rates, Journal of Finance, 58, p. 643.

Buyouts and Restructuring,” published in 2005, Enrique R. Arzac notes “if analysts’ growth expectations exceed the true but unobserved market expectations about future growth [the DCF formula] would itself generate an upward biased estimate of the equity premium.”⁴

- **Research has confirmed that the expected market risk premium (overall returns on the market versus risk free returns) is lower than was previously assumed.** A well known study by Fama and French, published in 2002, finds that “estimates [of the equity market risk premium] for 1951 to 2000, 2.55 percent and 4.32 percent, are much lower than the equity premium produced by the average stock return, 7.43 percent.”⁵ In another oft cited paper published in 2001 by Claus and Thomas titled “Equity Premia as Low as Three Percent? Evidence from Analysts’ Earnings Forecasts for Domestic and International Stock Markets,” the authors conclude that “for each year between 1985 and 1998, we find that the equity premium is around three percent (or less) in the United States and five other markets.”⁶
- **The size of the actual equity market premium realized in the market is higher than prospective equity returns.** Seth Armitage in his book “The Cost of Capital: Intermediate Theory” which was published in 2005 summarizes the current research as follows: “Almost all researchers on this question agree that the premium in the twentieth century in the United States ... has turned out to be larger than investors expected it to be.”⁷ Richard Grinold and Kenneth Kroner in their article “The Equity Risk Premium: Analyzing the long-run prospects for the stock market” conclude: “...examining the decomposition of expected returns makes it apparent that such an optimistic overall view [a 5.5% equity premium] requires one to be either optimistic about each component of the expected equity return or irrationally optimistic about at least one of the components.”⁸

⁴ Arzac, Enrique, 2005, *Valuation for Mergers, Acquisitions and Restructuring*, John Wiley & Sons, p.44.

⁵ Fama, E. and French, K., 2002, “The Equity Premium”, *Journal of Finance*, Vol. 57, No. 2, pp. 637-659.

⁶ Claus, J and Thomas, J , 2001, “Equity Premia as Low as Three Percent? Evidence from Analysts’ Earnings Forecasts for Domestic and International Stock Markets”, *Journal of Finance*, 55, No 5., pp. 1629-1666.

⁷ Armitage, S., 2005, *The Cost of Capital Intermediate Theory*, Cambridge University Press, p. 98.

⁸ Grinold, Richard and Kroner, Kenneth, “The Equity Risk Premium: Analyzing the long-run prospects for the Stock Market” *InvestmentInsights*, 2002, page 152.

571 **Q. Other than information from financial literature, is there direct indication of**
572 **the cost of capital being utilized in recent mergers activity in the utility**
573 **industry?**

574 A. Yes. Ameren's corporate structure demonstrates the significant merger activity
575 that has occurred since 1997. Reports from some of the merger transactions in the
576 industry enable the Commission to take advantage of direct evidence of investor
577 expectations rather than judgments derived from theoretical computations such as
578 the CAPM or the DCF model.

579
580 Part of the mandate of investment banks in making fairness opinions is coming up
581 with valuations of the utility companies involved in the merger. In the process of
582 making their valuations, the investment banks discount cash flows at a cost of
583 capital that reflects required investor returns, which, in turn, requires a cost of
584 equity hurdle rate. If the valuations made by investment banks are not biased,
585 then the equity cost of capital figures that underlie the valuation are presumably
586 also unbiased. The cost of equity capital used by investment banks to discount
587 future cash flows is the opportunity cost that measures required returns for
588 investments of similar risk. This is the same number that the ICC must establish
589 in this proceeding.

590
591 In the ComEd delivery service rate case, a letter from Lehman Brothers was
592 introduced. This letter explicitly stated, **“from a practical matter, regulatory**
593 **authorized ROEs are typically 300 or more basis points more than the**
594 **discount rates used in investment bank fairness opinions.”** I suggest that the
595 judgment of bankers, who are more closely attuned to investor expectations,
596 should be substituted for the judgment of consultants hired by utility companies.

597
598 ***g. Changes in Operating Risk***
599

600 **Q. How will general business risks facing the Ameren Companies be different**
601 **after the transition period, when the Companies' costs to acquire power are**
602 **to be passed through directly to consumers?**

603 A. Given the ICC order from the Ameren Companies' auction case, the companies
604 will have less business risk than they had in the past as integrated electric utility
605 companies and than they had during the transition period. The auction case
606 means that the companies will have virtually no commodity risk associated with
607 uncertain volumes, supplier credit or even variation in supply prices. In short, the
608 Ameren Companies will have little risk associated with being a "provider of last
609 resort."

610
611 **Q. Will risks facing the Ameren Companies' be different after 2007 because of**
612 **the changed revenue mix that will be in existence when they become a pure**
613 **wire companies?**

614 A. Yes. Relative to being an integrated utility company, the Ameren Companies will
615 receive a greater proportion of their operating income from residential customers.
616 Residential revenues have less variation related to overall economic activity than
617 revenues collected from other customer groups. For example, during a recession,
618 residential revenues do not typically decline as much as industrial revenues.

619
620 **Q. What is the relevant period for measuring business risk and cost of capital in**
621 **this case?**

622 A. The risk experienced by the Ameren Companies, coupled with the overall cost of
623 capital in the economy, determines the cost of equity capital. As with other
624 aspects of this case, the relevant period for measuring revenue requirement
625 components is the period after which rates become effective, for most customers
626 at 1/1/2007. Ms. McShane insists that the Ameren Companies are facing a high
627 level of political risk because rates from this case may not be implemented (for
628 example, if the rate freeze continues.) Ms. McShane testifies:

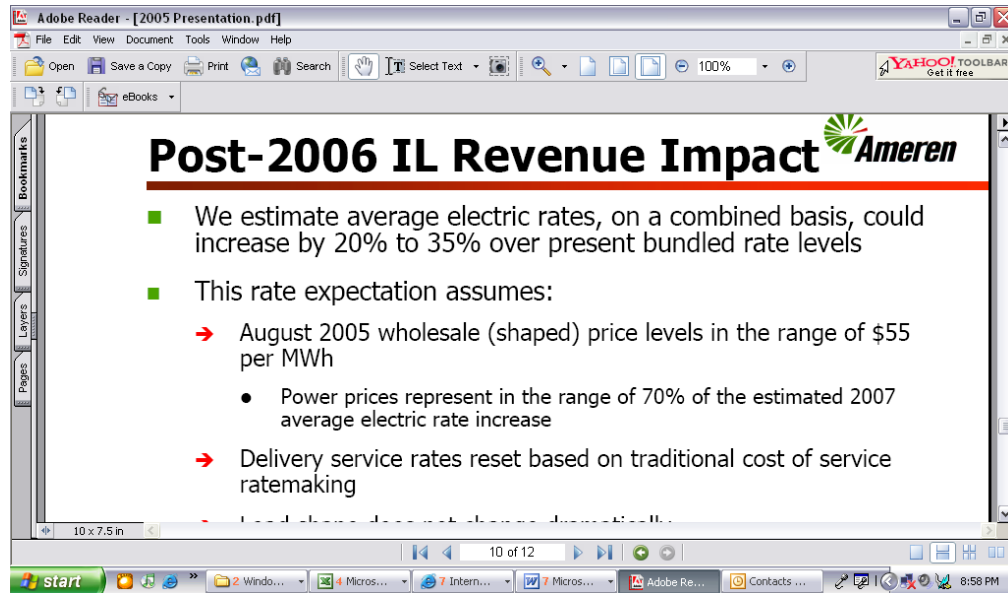
629
630 These comments [by credit rating agencies] and actions have been
631 driven expressly by recent political intervention in the regulatory
632 process, which creates uncertainty for investors. My return
633 recommendation for AmerenIP explicitly excludes consideration of
634 any regulatory uncertainty that may exist in Illinois as a result of the
635 recent *politicization of the regulatory environment*. Were recent
636 actions and *statements by some Illinois state officials* and their
637 impact on regulatory risk to be factored into the analysis of the
638 equity return requirement, the cost of equity and the recommended
639 allowed return would be significantly higher. (McShane testimony
640 at line 288, emphasis added)

641
642 Ms. McShane's protestations are wholly irrelevant to the cost of capital that must
643 be decided by the Commission in this proceeding. Instead, the relevant measure
644 of business risk for purposes of evaluating the cost of equity capital in this case is
645 the risk that is present when rates become effective after the end of the transition
646 period on January 1, 2007. This means that any uncertainty that may occur during
647 the transition period is irrelevant, because by this time, issues surrounding both
648 the power procurement and delivery service process for setting rates will have
649 been resolved. For a number of reasons discussed below, the business risk facing
650 the Ameren Companies will be much lower after 2007 than it is today.

651
652 **Q. Despite the fact that risks related to the ratemaking process will be resolved**
653 **by January 2007, please comment on Ms. McShane's further assertions that**
654 **the company is the victim of unwarranted political influence?**

655 A. Ameren has stated that after 1/1/2007 rates will increase by as much as 35% as
656 shown below. This means that ratepayers who happen to live on the Illinois side
657 of the Mississippi river will make payments far higher than ratepayers who
658 happen to live on the west side of the river, even though the utility company is the
659 same and the source of the power cannot be physically differentiated. Given the
660 costs incurred by ratepayers, the profits realized by investors and the importance
661 of electricity to the public, it is not surprising that elected officials would attempt

to intervene in the process. Ms. McShane seems to opine that the political process should not play a role in setting rates for electricity customers. Of course, the political process has always been a significant force involved in the setting of rates. To assume otherwise is to ignore reality.



Q. While not mentioning ratepayer impacts of this case, does Ms. McShane discuss investor impacts?

A. Yes. Ms. McShane proposes to set the rate of return above the cost of capital on original cost rate base because investors could experience a stock price decline (see line 540 of her testimony). If investor impacts are to be considered, as Ms. McShane suggests, then the Commission should also examine the relative position of ratepayers and shareholders since passage of the Act in 1997⁹. Such examination shows that:

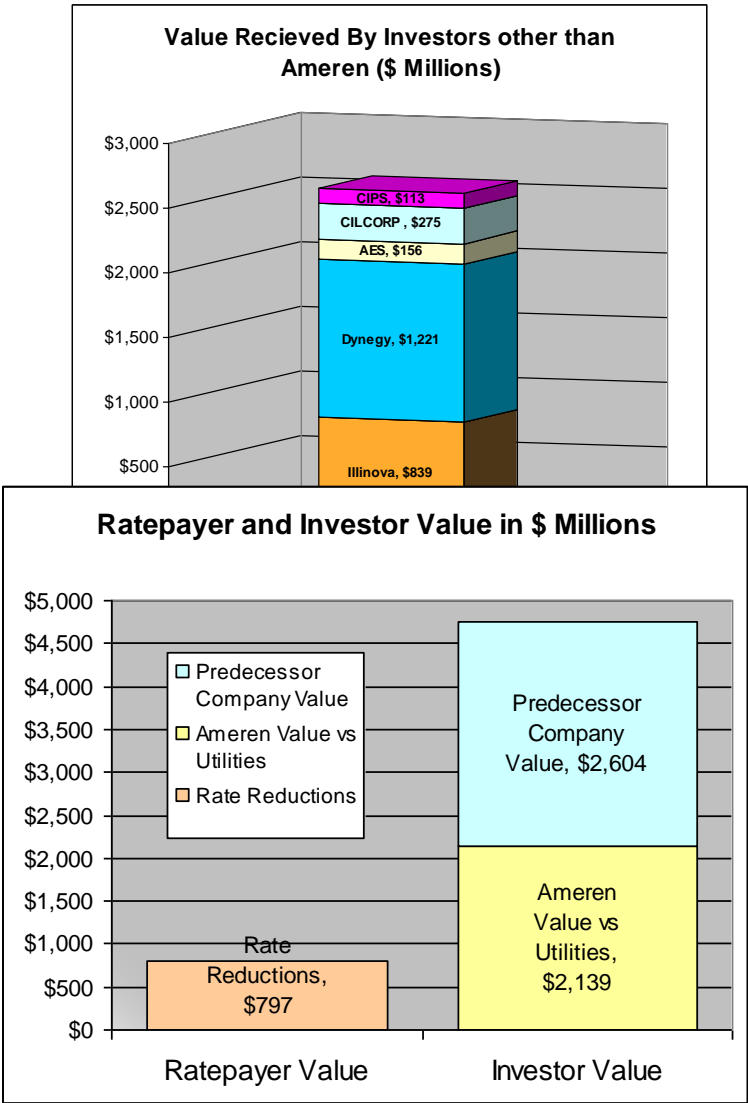
- (1) Investors in companies that owned Illinois assets purchased by Ameren have realized \$2.6 billion in value from passage of the Act. Predecessor companies

⁹ The Electric Service Customer Choice and Rate Relief Law of 1997. (220 ILCS 5/16-101 et seq.)

included utility companies – Illinova, CILCORP and CIPS – as well as Merchant Companies that purchased generation assets – AES and Dynegy.

- (2) Even excluding profits realized by Illinova, CILCORP, CIPSCO, Dynegy and AES, Ameren’s investors have realized returns far above both the S&P 500 and other utility companies. In dollar terms, Ameren investors have gained \$2.1 billion more than they would have generated from investing in other utility companies.
- (3) Ameren is positioned to earn profit margins that significantly exceed other utility companies as its return on equity of 28% from its generation business increases and as its distribution returns will rise from cessation of the rate freeze.
- (4) The aggregate amount earned by investors exceeds the value of the rate reductions to consumers of Illinois Power, CIPS, CILCO and Union Electric. The value of rate reductions has been about \$800 million, far less than the investor benefits.

The relative impacts on ratepayers and investors are shown on the two graphs below:



725

726

727

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730

731

732

733 **Q. Are the irrelevant political risks claimed by Ms. McShane only due to actions**
734 **taken by politicians?**

735 A. No. Utility companies such as Ameren have mounted political campaigns of their
736 own. Utilities have made statements that threaten insolvency if they do not
737 prevail on positions they have taken in regulatory proceedings. For example,
738 Exelon made the following threats concerning ComEd in Exelon's third quarter
739 10-Q report.

740

741 "Adverse consequences [of the ICC not approving ComEd's positions] could
742 include, but may not be limited to, ComEd's insolvency or bankruptcy access for
743 ComEd to credit markets to finance operations and capital investment, and loss of
744 ComEd's capacity to enter into bilateral long-term energy procurement contracts,
745 which would likely force ComEd to procure electricity at more volatile and
746 potentially higher prices in the spot market. Moreover, to the extent ComEd is not
747 permitted to recover its costs, ComEd's ability to maintain and improve service
748 may be diminished and its ability to maintain reliability may be impaired."

749

750 When utility companies make these sorts of threats, it would be irresponsible for
751 rating agencies not to take note. In sum, Ms. McShane's statements regarding
752 Ameren being the victim of political risk are misleading and have absolutely
753 nothing to do with cost of capital estimation in this case.

754

755

756 **V. MEASUREMENT OF THE AMEREN COMPANIES' COST OF CAPITAL**
757 **USING THE DIVIDEND DISCOUNT MODEL**

758

759 **Q. How have you organized your discussion concerning the manner in which the**
760 **DCF Model should be used to properly measure the Ameren Companies'**
761 **cost of equity capital?**

762 A. I have separated my analysis of the Ameren Companies' cost of equity capital
763 estimated from the DCF model into the following sections.

764 1. **Summary** -- A brief description of the Ameren Companies cost of equity
765 capital that results from the appropriate application of the DCF model.
766 This shows that the Ameren Companies cost of equity is 7.95% through
767 appropriate application of the model.

768 2. **Theoretical Discussion** – A discussion of sample selection, growth rate
769 and other issues that arise when implementing the DCF model in an
770 unbiased manner. Working through the various theoretical concepts
771 confirms that 7.95% is an unbiased estimate of Ameren's cost of equity
772 and that Ms. McShane's estimate is biased upwards.

773 3. **Problems with Ms. McShane's DCF Estimate:** A discussion of
774 differences between my DCF estimate of 7.95% and Ms. McShane's
775 estimate of 9.80% (without market to book adjustments). I show that her
776 estimate comes from inappropriate growth rates and sample selection.

777 4. **Sensitivity Analysis:** An analysis of how the DCF estimate varies using
778 alternative comparable samples, alternative growth rates and a two stage
779 model.

780

781

782 *a. DCF Summary*

783

784 **Q. What cost of equity capital results from an unbiased application of the DCF**
785 **model?**

786 A. When appropriate analytical techniques and data are used in applying the DCF
787 model, the resulting estimate of the Ameren Companies' cost of equity is 7.95%.
788 This number is derived from:

- 789 - A sample of companies that includes wires-only distribution electricity
790 distribution companies as well as a complete set of natural gas distribution
791 companies. The wires only distribution companies include CH Energy
792 (CHG), Energy East (EAS), Consolidated Edison (ED), NSTAR (NST),
793 Northeast Utilities (NU) and UIL Holdings (UIL).
- 794 - Growth rates computed from the return on equity multiplied by the
795 retention rate (1 minus the dividend payout ratio). The returns on equity
796 and the dividend payout ratios are taken from the Finance.Yahoo! website.
797 The median growth rate for the sample is 3.5%.
- 798 - Dividend yields from stock prices and forward dividend per share as of
799 3/19/2006.

800

801 Details of the calculation for each company in the sample are shown on CUB
802 Exhibit 1.01.

803

804 ***b. Theoretical DCF Issues - Introduction***

805

806 **Q. Review the notion behind using the dividend discount model to determine**
807 **cost of equity capital?**

808 A. The dividend discount model or DCF model has been used in regulatory
809 proceedings for decades to estimate the cost of equity capital. The approach
810 derives the implied cost of capital from a model that marginal investors are
811 assumed to use in valuing shares when they buy and sell stocks. For example, if
812 the investors who are buying shares are assumed to hold shares indefinitely and
813 somehow know what all future dividends will be, then, with knowledge of the

814 expected future dividends, one could back-out the cost of equity the investors
815 must have used in establishing the value of the stock.

816
817 By assuming that marginal investors, who are buying and selling shares, believe
818 the growth rate in dividends is constant forever, one can establish the well known
819 DCF equation. Essentially, the value of a share is the next anticipated dividend
820 divided by the difference in the cost of equity and the growth rate in dividends -- $P = D_1 / (k - g)$. One can then rearrange the valuation model and establish a simple
821 equation for the cost of capital -- $k = D_1 / P + g$. This equation implies that lower
822 growth results in a lower estimated cost of equity capital because a lower discount
823 rate must be used to arrive at the same share price. Because this model estimates
824 the cost of capital from assumed investor valuation models, the inputs to the
825 model -- dividend yield and the growth rate -- are not the direct drivers of risk and
826 cost of capital.
827

828
829 **Q. Is inference of the cost of capital only possible using the dividend discount**
830 **model as the basis for simulating investor valuation?**

831 A. No. Inference of cost of capital from an investor valuation model does not require
832 use of dividend forecasts to establish stock price valuation. Other valuation
833 formulas can be used to infer the cost of equity capital, instead of using the
834 present value of projected dividends as the underlying valuation model. In
835 particular, a model that is used to evaluate price to earnings ratios can be the basis
836 for estimating the implicit cost of equity capital.

837
838 **Q. Why can cost of equity estimates differ when alternative analytical**
839 **techniques are applied in the DCF and CAPM?**

840 A. Application of the DCF and the CAPM models is not as simple as finding a
841 number in the Wall Street Journal and plugging the number into a formula.
842 Theoretical debates arise in applying both models. These debates are related to
843 issues such as quarterly discounting, mean reversion adjustment to betas, use of

alternative methods for estimating the equity risk premium, application of different techniques for measuring the growth rate, summarizing data with the mean or the median and so forth. Unlike the variation in cost of capital that comes from using alternative data sources and comparative samples, differences in cost of capital estimates that arise from alternative analytical techniques should not lead to significant variation in a cost of capital range. The differences in cost of equity estimates resulting from alternative analytical techniques can be resolved in an unambiguous manner by working through financial theory and studying previous research.

Q. Describe some issues associated with implementation of the DCF model.

A. Some of the analytical issues that arise in implementing the DCF model for the Ameren Companies include:

- How should one select an appropriate sample of comparable companies with similar risk to the Ameren Companies to derive the implied cost of equity capital;
- What method should be used to compute the constant expected growth rate of dividends assumed by marginal investors for each company in the comparable sample;
- Is a valuation model using earnings a better way to derive the implicit cost of equity capital than the dividend growth model;
- Can a two-stage DCF model be used to reflect the movement of market to book ratios toward 1.0 over the long run;
- Should adjustments for quarterly compounding be made in deriving implicit discount rates;

- Is it better to use averages or medians in summarizing data generated by small samples.

c. Theoretical DCF Issues – Comparable Sample

Q. Discuss the first issue associated with implementation of the DCF model, choice of a comparable sample.

A. A comparable sample is intended to collect a group of companies with similar risks to the company in question. While this objective is commendable, given the incentives of rate case consultants to come up with a high or a low number, one must wonder whether the samples are derived by data mining and selecting companies that will result in a favorable number for the position presented. In this case, the sample is intended to measure the risk of a wires-only electricity distribution company. While one may argue against using natural gas distribution companies or electricity companies with generation that are still regulated, it is clear that the wires-only distribution companies with listed shares should be part of the sample. The electricity distribution companies that have listed shares include Energy East, NSTAR, Consolidated Edison and UIL Holdings.

d. Theoretical DCF Issues – Growth Rates from Sell-Side Analyst Forecasts and the ROE x Retention Rate Formula

Q. Summarize some of the issues that are part of estimating an unbiased long-term growth rate?

A. Determining the appropriate growth rate is the most contentious issue in implementation of the DCF model. Subjects I discuss involving the growth rate include:

- Problems that occur with use of earnings estimates made by sell-side investment analysts which have been demonstrated to significantly overstate actual dividend growth;
- How application of the return on equity multiplied by retention rates is a reasonable way to derive utility company growth rates because of stable earnings;
- What happens to estimated cost of capital when earnings growth is used in the DCF formula and payout ratios are declining; and
- Biases in the DCF model from the assumption that investors believe market to book ratios far above 1.0 can be sustained indefinitely.

Q. Discuss some of the current research with respect to use of growth rates from investment analyst forecasts in deriving the implied cost of capital?

A. A number of financial economists have demonstrated that investment analyst estimates of growth in earnings are biased in an upward direction. If the stock market is efficient and analyst growth rates are too high, stock prices and equity values must reflect the true unbiased growth estimates rather than the upwardly biased sell-side analyst forecasts. This means that use of analyst forecasts as the growth rate will over-estimate the cost of capital inferred from the DCF valuation equation.

Q. Discuss some of the current research with respect to use of growth rates from investment analyst forecasts in deriving the implied cost of capital?

A. Many researchers have documented the upward bias in analyst growth projections and commensurate bias in DCF cost of capital estimates. Some quotes from current research include:

In their text titled “Valuation: Measuring and Managing the Value of Companies” published in 2005, Tim Koller, Marc Goedhart and David Wessels state that “analyst forecasts focus on the short term and are severely upward biased.”¹⁰

Enrique Arzac comments on the difficulty of predicting growth rates and the potential for the DCF model to over-estimate the cost of equity as follows: “The problem with [the DCF] approach is that long-term dividend growth rate of an individual company cannot be estimated with any degree of precision. Hence, the dividend growth model is not likely to produce reliable estimates of the cost of equity capital of individual companies....A number of empirical studies have documented optimistic bias in analysts’ opinions....Thus, it seems reasonable to conclude that [the DCF equation] yields an upper bound to the equity premium.”¹¹

Claus and Thomas conclude that earnings and dividend growth rates used for the DCF model “exhibit substantial optimism bias and need to be adjusted downward.”¹²

Louis Chan and his coauthors conclude that “over the period 1982 to 1998, the median of the distribution of IBES growth forecasts is about 14.5 percent, a far cry from the median realized five year growth rate of about 9 percent for income before extraordinary items.”¹³

Fama and French state that “In short, we find no evidence to support a forecast of strong future dividend or earnings growth at the end of our sample period.”¹⁴

Q. Given the problems with analyst growth rate projections, how can one estimate growth rates?

A. If the prospective return on equity is constant and new shares are either issued or re-purchased at book value, it is easy to demonstrate that the growth rate in earnings and dividends can be modeled by multiplying the future return on equity by one minus the dividend payout ratio:

Percentage Growth in Earnings = Return on Equity x (1 – Dividend Payout Ratio)

¹⁰ Koller, T., Goedhart, M., Wessells, D., 2005, Valuation Measuring and Managing the Value of Companies, Hoboken, New Jersey, John Wiley & Sons p. 305.

¹¹ Ibid, Arzac, Enrique, 2005, pp. 43-44.

¹² Ibid, Claus and Thomas, 2001, p. 1662.

¹³ Chan, L., Karceski, j and Lakonishok, J, 2003, The Level and Persistence of Growth Rates, Journal of Finance, 58, p. 672.

¹⁴ Fama and French, 2002.

To illustrate why this formula represents growth, consider a couple of extreme cases:

- If the dividend payout ratio is 100%, then even when a utility is currently earning more than its cost of capital (such as Ameren and NICOR) the earnings and book value do not grow (unless equity is issued at a market to book value above 1.0). In this case the equity investment on the balance sheet does not increase because no earnings are retained (the equity balance is the prior year balance plus earnings less dividends). Therefore, a constant future return on equity applied to a constant amount of equity means that the income also remains constant. With no income growth, the EPS growth is zero. Since the 100% dividend payout means the retention rate is zero, the growth rate formula produces a correct zero value.
- At the other extreme, if the dividend payout ratio is zero, then every dollar of earnings goes to the equity account on the balance sheet. Since the income is the return on equity multiplied by the equity balance, the equity itself increases by the return on equity percentage in each year. As the return on equity is assumed to be constant and the equity balance increases by the return on equity, earnings also increase by the ROE. Therefore, since the payout ratio is zero, the growth rate formula that multiplies 100% by the ROE is confirmed.
- For intermediate cases where the dividend payout is between zero and one, the growth rate in earnings is the return on equity multiplied by one minus the dividend payout ratio. Here, the growth rate in equity is determined by both the increase in the equity balance driven by the payout ratio and the return on equity that drives the income that increases the equity balance.

Q. Does the retention rate multiplied by return on equity formula understate investor expectations of growth when market to book ratios exceed 1.0?

A. No. The growth rate formula is valid for companies with constant returns on equity and constant dividend payout ratios. The formula certainly does not understate growth but may overstate growth because rational investors should not expect that returns on equity for regulated utilities that are clearly earning more than the cost of capital can be maintained. Returns for utility companies are quite stable, as are payout ratios. It is therefore reasonable to presume that investors expect future earnings to be similar in the long-run to the returns expected in the

next year. Relative to the use of sell-side analyst estimates, the use of the retention rate multiplied by the return on equity is the most reasonable method for estimating growth rates in the DCF formula.

e. Theoretical DCF Issues – Problems in Estimating DCF Cost of Equity when Dividend Payout Ratio is Changing

Q. How is the growth rate used in the DCF formula affected by changes in the dividend payout ratio?

A. When the dividend payout ratio is expected to change in the future, the growth rate in dividends does not equal the growth rate in earnings. In this case neither the growth rate in dividends nor the growth rate in earnings correctly measures the cost of equity used by marginal investors. This issue is central to the DCF estimate made by Ms. McShane because her sample includes a very different estimate of growth in dividends and earnings as described in her testimony:

“... the average growth rate in dividends forecast by Value Line for my proxy sample of LDCs for the period through 2008-2010 is 2.3%; the corresponding average Value Line forecast of earnings growth for the same period is 6.2%.” (McShane direct testimony, page 19.)

If the dividend growth is used instead of the earnings growth, the estimated cost of capital declines from 10.6% to 6.7% as shown in the table below.

Effect of Dividend Growth versus Earning Growth Using McShane's Sample					
	Dividend Yield	Plus	Growth Rate	Equals	Cost of Equity
Value Line Earnings Growth	4.40%	+	6.20%	=	10.60%
Value Line Dividend Growth	4.40%	+	2.30%	=	6.70%

In addition to the issue raised by the above table, the changes in payout ratios affect Ms. McShane's estimation of growth rates. Rather than using current payout ratios and current returns, she uses projected payout ratios that are lower than current payout ratios. Ms. McShane's subtle use of forecasted retention rates and forecast ROEs is one of the many ways she introduces unnecessary complexity into the discussion and obfuscates the issue.

Q. Describe what happens to dividend growth and earnings growth when the dividend payout ratio increases or decreases?

A. Assuming the return on equity is constant, when the dividend payout ratio is increasing, the dividend growth exceeds the earnings growth. To see this, consider a company that has earnings per share of 2.00 and is only paying 10% of its earnings as dividends. If the company changes policy and decides to distribute 50% of its earnings, then the company will experience very high dividend growth, but its earnings growth will decline because it will retain less income in its equity balance. If the dividend growth exceeds the earnings growth and the return on equity is constant, the dividend payout ratio is increasing.

When the dividend payout ratio is declining, the actual growth rate in dividends is below the growth rate in earnings. This is the case for the sample used by Ms. McShane. To illustrate this, consider the case of a company with 2.00 earnings that is currently paying out all of its earnings as dividends. If the dividend payout ratio is cut to 50%, then the growth in dividends will be negative, but the earnings growth will be positive. In this situation, use of earnings growth in the DCF formula will not reflect the cut in cash flow experienced by investors from the reduced dividend. However, the earnings growth will include the effects of the lower payout. Use of the earnings growth overstates the cost of capital as shown in the table below:

Illustration of How Cost of Capital is Overstated with Declining Payout Ratios			
	100% Payout	50% Payout	100% to 50% Payout
ROE	8.00%	8.00%	8.00%
EPS	2.00	2.00	2.00
Payout	100%	50%	Changing
Current DPS	2.00	1.00	2.00
Share Price	25	25	25
Yield	8.00%	4.00%	8.00%
	+	+	+
Earnings Growth	0.00%	4.00%	4.00%
	=	=	=
DCF Estimate	8.00%	8.00%	12.00%

Q. What does the above example imply about measuring growth from the retention rate multiplied by the return on equity?

A. The example shows that when dividend payout ratios are declining, the future retention rate multiplied by the future return on equity overstates growth. This may seem to be a minor point, but it has creates a large upward bias in Ms. McShane's cost of capital estimate as discussed below.

Q. Given the importance of changing payout ratios to Ms. McShane's estimates, have you investigated the effect of changing payout ratios on the estimated cost of equity?

A. Yes. I have prepared a simulation model that demonstrates how the DCF model measures the cost of equity capital using alternative dividend payout ratios. To illustrate the effect of changing payout ratios, I have prepared the following three scenarios:

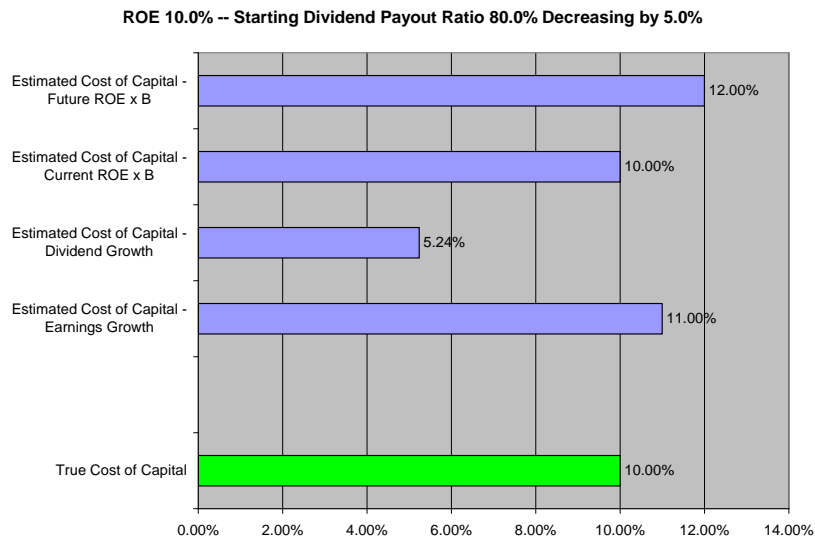
1. A scenario where the dividend payout ratio and the return on equity are constant.
2. A scenario where the dividend payout ratio increases in the first five years and then remains constant.

- 1092 3. A scenario where the dividend payout ratio decreases in the first five years
1093 and then remains constant.

1094
1095 The conclusions from this analysis include:

- 1096
1097 1. When the dividend payout ratio is constant, the earnings growth equals the
1098 dividend growth and the DCF correctly measures the discount rate used by
1099 investors in discounting cash flows.
1100
1101 2. Where the dividend payout ratio is *decreasing* and the earnings growth is
1102 used in the DCF, the estimated cost of equity *exceeds* the true cost of
1103 capital used by investors in discounting cash flows. If the dividend
1104 growth rate is used, the estimated cost of capital from the DCF is lower
1105 than the actual discount rate. The overstatement of the cost of equity is
1106 aggravated if the return on equity is increasing.
1107
1108
1109 3. Where the dividend payout ratio is *increasing* and the earnings growth is
1110 used in the DCF, the estimated cost of equity understates the true cost of
1111 capital used by investors in discounting cash flows. If the dividend
1112 growth rate is used, the estimated cost of capital from the DCF is higher
1113 than the actual discount rate.

1114
1115 The second point above is the most important for this case. Ms. McShane has
1116 used Value Line estimates in a situation where the dividend payout is decreasing.
1117 Her use of the earnings growth does not produce an unbiased estimate of the cost
1118 of equity capital, but instead results in an upward bias. Results of this scenario,
1119 where the dividend payout ratio is declining are illustrated on the graph below
1120 from one of the simulations. The graph demonstrates that use of earnings growth
1121 biases the estimated cost of capital upwards by 100 basis points and that use of
1122 the future return on equity multiplied by the retention rate biases the estimated
1123 cost of equity upwards by 200 basis points.



f. Theoretical DCF Issues – Two Stage Model to Reflect Movement of Market to Book Ratios Towards 1.0

Q. How should growth rates in the DCF model be adjusted to reflect the fact that rational investors do not assume utility companies can earn more than their cost of capital forever?

A. The DCF growth parameter measured from the ROE multiplied by the retention rate assumes that ROE's are similar to historic levels even though market to book ratios are substantially above 1.0. Rational investors recognize that this situation is not sustainable forever. To resolve the implied over-earning assumption in the DCF, one could develop a multi-stage DCF model where growth rates are adjusted so that the market to book ratio eventually moves nearer to 1.0 as rational investors would expect. Since market to book ratios are currently well above 1.0 and reductions in the market to book ratio come from lower equity returns, the adjustment would reduce the projected earnings growth rate and lower the cost of equity estimate.

Implementing growth rates that reflect the movement of the market to book ratio toward 1.0 would require assumptions with respect to just how close investors

1154 expect the market to book ratio to approach 1.0 and how long investors think the
1155 process will take. These assumptions would be subjective and add even more
1156 complexity to the process so I did not include them in my baseline estimate.
1157 However, the direction of the market to book adjustment is unambiguous; it
1158 would further lower the estimated cost of equity capital. The adjustment is
1159 discussed below in the sensitivity analysis.

1160
1161 ***g. Theoretical DCF Issues – Quarterly Discounting and Summarizing Data***
1162

1163 **Q. Is use of quarterly discounting appropriate in application of the DCF to the**
1164 **allowed return on equity?**

1165 A. No. Use of quarterly discounting will allow utility companies to earn more than
1166 their cost of equity capital. I do not discuss this issue in detail because Ms.
1167 McShane correctly did not use quarterly discounting in her analysis.

1168
1169 **Q. Should the median or the mean be used in summarizing small samples of**
1170 **companies for estimating the DCF?**

1171 A. In cases where samples are relatively small, the average can be strongly
1172 influenced by the cost of equity estimates for a few companies. Given the
1173 potential for one or two companies to have such a large effect on the average,
1174 practitioners generally use the median rather than the average in valuations. This
1175 is noted by Enrique Arzac:

1176
1177 As is usually the case, the number of comparable firms is small
1178 and choosing the median rather than the mean values for
1179 valuation is advisable in order to avoid the effect of extreme
1180 sample values.¹⁵

1181
1182
1183

¹⁵ Arzac, Enrique, 2005, *Valuation for Mergers, Acquisitions and Restructuring*, John Wiley & Sons,
p. 65.

1184 ***h. Ms. McShane's DCF Estimate - Introduction***

1185
1186 **Q. Discuss some of your disagreements with the way Ms. McShane uses the DCF**
1187 **model to estimate the Ameren Companies' cost of equity?**

1188 A. Ms. McShane uses the DCF model to estimate Ameren's cost of equity and then
1189 she makes a series of adjustments that increase the cost of equity. I will address
1190 her adjustments to the DCF in the section that evaluates market to book ratios
1191 below. (These adjustments are nothing more than an attempt to allow Ameren to
1192 continue earning more than its cost of capital through obfuscating the discussion.)
1193 In the paragraphs below I discuss biases in Ms. McShane's DCF estimate before
1194 she makes the adjustments. Some of the biases in her estimate include:

- 1195
1196 • Using the earnings growth rates to represent the forward dividend yield
1197 rather than using market expected dividends.
- 1198 • Using a small sample that excludes other traded wires-only companies.
- 1199 • Using upward biased sell-side investment analyst growth rates from
1200 I/B/E/S.
- 1201 • Using Value Line earnings growth rates when the earnings growth rate
1202 exceeds the dividend growth by a wide margin.
- 1203 • Using the retention rate multiplied by ROE formula with Value Line
1204 projected retention rates in 2008-2010 and projected returns rather than the
1205 retention rates consistent with forward dividend yields.
- 1206 • Using nominal macro-economic growth to represent long-run growth
1207 estimates without considering the long-term growth prospects of specific
1208 companies in the industry.

1209
1210 Before discussing and correcting these biases in Ms. McShane's DCF estimates, I
1211 compare her data sources to the data sources that I used. I demonstrate Ms.

McShane's mechanics and data sources by working through her DCF estimates for NICOR.

Q. How does Ms. McShane estimate the Ameren Companies' cost of equity capital using the DCF model?

A. Ms. McShane computes a variety of DCF estimates using alternative growth rates with a one-stage model and she applies a GDP growth rate of 5.5% in a two-stage model. She uses one model derived from I/B/E/S growth estimates and three models using Value Line estimates and averages all four models to come up with a 9.8% estimate as shown in the table below.

McShane DCF Estimates				
Model	Growth Rate Source	Mean	Median	
Earnings Growth (I/B/E/S)	I/B/E/S	8.80%	8.80%	
Earnings Growth (<i>Value Line</i>)	Value Line 5 Years	10.60%	11.10%	
Sustainable Growth	Value Line 2008-2010 BxR	9.30%	9.20%	
Cash Flow per Share Growth	Value Line 5 Years	10.80%	9.70%	
Average		9.88%	9.70%	
Average of Median and Mean			9.80%	

The model with the least bias is the one that uses the I/B/E/S earnings estimates and comes up with an estimate of 8.8%. However, Ms. McShane averages three different models from Value Line that contain dividend payout assumptions that bias the DCF estimates. She then averages the median and mean to come up with her 9.8% estimate. As explained above, she chose not to use the dividend growth in her Value Line sample, which would have resulted in an estimate of 6.7% instead of 10.6%. I explain below that none of the Value Line estimates in her table accurately reflect investor discount rates, which is the sole objective of the DCF model.

Ms. McShane herself appears to place more weight on the I/B/E/S growth rates as she uses these in her two-stage model. Her two-stage model produces a cost of equity of 9.6%.

i. Ms. McShane's DCF Estimate - Mechanics

Q. Discuss how your data sources and DCF equations compare to the information used by Ms. McShane.

A. To illustrate my data sources compared to Ms. McShane's data, I work through the components the DCF cost of equity capital for a single company and compare the estimates. Since Ms. McShane did not perform the DCF analysis for Ameren, I have used NICOR to illustrate the DCF model mechanics and data sources.

Ms. McShane estimates that NICOR's cost of equity capital ranges between 6.83% and 8.50% using her one stage model as shown in the table below. She computes the forward dividend per share through multiplying the current dividend per share by the growth rate in earnings rather than the growth rate in dividends. She also shows that NICOR's expected return on equity from Value Line is 14.1%. If NICOR indeed earns 14.1% and if one were to subscribe to Ms. McShane's one-stage DCF model in estimating NICOR's cost of equity capital, rates recently set by the ICC have allowed a utility company to earn between 5.60% and 7.27% more than its cost of capital. This result is unfair and causes inequitable wealth transfer from ratepayers to shareholders that hopefully will not occur in this case.

McShane Estimates of NICOR Cost of Equity from DCF Model									
	Stock Price	Dividend	Dividend Yield		Growth		DCF Estimate	Projected ROE	Over-Earning
IBES Growth	39.3	1.86	4.83%	+	2.00%	=	6.83%	14.10%	7.27%
Value Line Earnings	39.3	1.86	4.83%	+	2.00%	=	6.83%	14.10%	7.27%
Value Line Future BxR	39.3	1.86	4.90%	+	3.60%	=	8.50%	14.10%	5.60%
Value Line Cash Flow	39.3	1.86	4.90%	+	3.50%	=	8.40%	14.10%	5.70%

1269 The information I used in my analysis is similar to that used by Ms. McShane.
1270 Current share prices and forward dividends per share are derived from the Yahoo!
1271 Website. Data for the forward ROE and the forward payout ratio are also derived
1272 from Yahoo!. Components of my DCF estimate that yields a 7.95% cost of equity
1273 estimate are shown on CUB Exhibit 1.01.

1274

1275 **Q. Is Ms. McShane's computation of forward dividend yields correct?**

1276 A. No. By multiplying the current dividend per share by earnings growth rather than
1277 dividend growth, the forward dividend yield is overstated any time the earnings
1278 growth exceeds the dividend growth. Dividend yields should be computed from
1279 market expectations of future dividend per share as shown in the second NICOR
1280 table above.

1281

1282 **Q. Is Ms. McShane's comparable sample consistent with her written testimony?**

1283 A. No. Ms. McShane suggests that wires-only electricity companies are the most
1284 appropriate sample but she ignores electric companies that are publicly traded and
1285 have no generation. Her discussion of a comparable sample seems to suggest that
1286 wires-only electric companies such as Energy East should certainly be included in
1287 the comparable sample:

1288

1289 In applying the DCF test, I recognized that the objective is to set the
1290 return component of the delivery service tariffs. Thus, in principle, the
1291 return should reflect the stand-alone principle, that is, the cost of capital
1292 for delivery service, which is a "wires" function. Most of the publicly-
1293 traded electric utilities operate not only the "wires" business, but also
1294 have generation assets. These utilities would not be appropriate proxies
1295 for AmerenLP's delivery service. ***It is not possible to select an adequate***
1296 ***sample of "wires-only" electric utilities, i.e., companies which are***
1297 ***predominantly transmission and distribution utilities.*** (McShane
1298 testimony at line 258, emphasis added.)

1299

1300 I have identified seven companies that are wires-only and have traded share prices
1301 that are shown on CUB Exhibit 1.01. At a minimum, these companies should be

included in a sample that is used to derive the cost of capital for a “pure play” distribution company.

j. Ms. McShane’s DCF Estimate – Growth Rates

Q. Do the I/B/E/S earnings growth estimates result in an unbiased cost of equity estimate?

A. No. Ms. McShane’s I/B/E/S model, that results in a cost of capital estimate of 8.8%, does have fewer biases than the other models. However, use of analyst growth rates yields growth rates that are optimistic and result in upwardly-biased DCF estimates, as I have previously discussed. I/B/E/S growth rates exceed growth rates using the corrected retention rate multiplied by ROE formula by more than 1% as shown in the table below (using the payout ratio and the ROE from actual 2005 data).

Company	Current BxR	I/B/E/S Growth	Difference
AGL RESOURCES INC	6.19%	5.00%	-1.19%
ATMOS ENERGY CORP	2.30%	6.00%	3.71%
CASCADE NATURAL GAS CORP	-1.40%	4.50%	5.90%
LACLEDE GROUP INC	3.05%	4.00%	0.95%
NEW JERSEY RESOURCES	8.50%	5.50%	-3.00%
NICOR INC	2.38%	2.00%	-0.37%
NORTHWEST NATURAL GAS CO	3.70%	5.00%	1.30%
PEOPLES ENERGY CORP	0.54%	3.50%	2.96%
PIEDMONT NATURAL GAS CO	3.52%	5.00%	1.48%
SOUTH JERSEY INDUSTRIES INC	6.20%	5.50%	-0.70%
SOUTHWEST GAS CORP	2.34%	4.00%	1.66%
WGL HOLDINGS INC	4.56%	4.00%	-0.56%
Mean	3.49%	4.50%	1.01%
Median	3.29%	4.75%	1.12%

When applying growth rates for regulated utility companies using the DCF model it is not necessary to use the biased sell-side analyst estimates because ROEs are stable. The use of an appropriate growth rate reduces Ms. McShane’s DCF estimate to below 7.8%.

Q. Did Ms. McShane correctly apply the retention rate multiplied by the ROE formula?

A. No. As I explained above, when the dividend payout ratio is decreasing, the use of future ROE multiplied by future retention rates causes an upward bias in the growth rate and DCF cost of capital estimate. This causes Ms. McShane's DCF estimate using retention rate multiplied by ROE formula to decline from 9.2% to 7.79%.

There are two problems with Ms. McShane's use of prospective ROEs and prospective payout ratios:

- The use of future ROE's includes the upward bias related to optimistic analyst forecasts, as discussed above.
- The use of future payout ratios that are lower than current payout ratios neglects the decline in cash flow to investors from the reduction in dividends.

The fact that these biases are present in Ms. McShane's estimates is demonstrated in the table below which uses the recent Value Line reports to compare the growth rates using current versus future return on equity and payout ratios.

Company	Earnings Growth	Dividend Growth	Current Payout 2005	Prospective Payout	Prospective vs Current	Current ROE	Prospective ROE	Increase in ROE	Current BxR	Prospective BxR
AGL RESOURCES INC	4.00%	6.50%	52.00%	60.00%	8.00%	12.90%	12.50%	-0.40%	6.19%	5.00%
ATMOS ENERGY CORP	7.00%	2.00%	73.00%	54.00%	-19.00%	8.50%	10.50%	2.00%	2.30%	4.83%
CASCADE NATURAL GAS CORP	8.50%	0.50%	118.00%	63.00%	-55.00%	7.80%	8.50%	0.70%	-1.40%	3.15%
LACLEDE GROUP INC	7.00%	2.00%	72.00%	51.00%	-21.00%	10.90%	13.00%	2.10%	3.05%	6.37%
NEW JERSEY RESOURCES	4.50%	4.50%	50.00%	48.00%	-2.00%	17.00%	14.50%	-2.50%	8.50%	7.54%
NICOR INC	4.00%	1.50%	81.00%	72.00%	-9.00%	12.50%	13.00%	0.50%	2.38%	3.64%
NORTHWEST NATURAL GAS CO	7.00%	4.00%	63.00%	60.00%	-3.00%	10.00%	10.50%	0.50%	3.70%	4.20%
PEOPLES ENERGY CORP	0.50%	1.00%	95.00%	82.00%	-13.00%	10.80%	13.50%	2.70%	0.54%	2.43%
PIEDMONT NATURAL GAS CO	6.00%	5.50%	68.00%	67.00%	-1.00%	11.00%	12.50%	1.50%	3.52%	4.13%
SOUTH JERSEY INDUSTRIES INC	7.00%	6.00%	50.00%	52.00%	2.00%	12.40%	13.00%	0.60%	6.20%	6.24%
SOUTHWEST GAS CORP	8.50%	0.00%	64.00%	35.00%	-29.00%	6.50%	10.50%	4.00%	2.34%	6.83%
WGL HOLDINGS INC	2.00%	2.00%	62.00%	60.00%	-2.00%	12.00%	11.00%	-1.00%	4.56%	4.40%
Mean	5.50%	2.96%	70.67%	58.67%	-12.00%	11.03%	11.92%	0.89%	3.49%	4.90%
Median	6.50%	2.00%	66.00%	60.00%	-6.00%	10.95%	12.50%	1.55%	3.29%	4.62%

Decline in payout ratio

Increase in ROE

1360 **Q. Comment on Ms. McShane's use of Value Line earnings growth rates in**
1361 **application of her DCF model.**

1362 A. Ms. McShane's model that uses Value Line earnings estimates results in a higher
1363 number than the I/B/E/S model because Value Line earnings estimates are even
1364 higher than the growth rates projected by other sell-side analysts. This means the
1365 upward bias from analyst estimates are aggravated from use of the Value Line
1366 estimates. Recall that the Value Line earnings estimates are higher than the
1367 dividend growth because of declining payout ratios and increasing ROEs. The
1368 simulation model demonstrates that growth rates generated from increasing ROE
1369 and declining payout produces an upward bias in the cost of equity estimate from
1370 the DCF model.

1371
1372 **k. Ms. McShane's DCF Estimate – Two Stage Model**

1373
1374 **Q. Does Ms. McShane's two stage model accurately estimate the Ameren**
1375 **Companies' cost of equity capital?**

1376 A. No. Ms. McShane's approach of using the GDP growth to represent long-term
1377 growth is wrong from both a theoretical standpoint and a quantitative perspective.
1378 Problems with her application of a 5.5% growth rate derived from her projection
1379 of nominal GDP growth include:

- 1380
1381 • First, rational investment analysts realize there is a limit to the extent that market
1382 to book ratios can be sustained given that regulators are mandated to grant returns
1383 equivalent to the cost of capital. A proper application of the two stage model
1384 would reflect movement of market to book ratios towards 1.0.
- 1385
1386 • Second, the GDP number used by Ms. McShane is much higher than GDP figure
1387 used in the Chan, Karceski, and Lakonishok article. While Ms. McShane uses a
1388 number of 5.5%, the authors suggest using 3.5% as demonstrated by the following
1389 statement:

1390
1391 "… the growth in real income before extraordinary items is roughly 3.5
1392 percent per year. This is consistent with the historical growth rate in real
1393 gross domestic product, which has averaged about 3.4 percent per year

over the period 1950 to 1998. It is difficult to see how the profitability of the business sector over the long term can grow much faster than overall gross domestic product.”¹⁶

- Third, while GDP growth has been used as a representation of aggregate growth for all stocks, this does not mean that each industry grows at the same rate. Even if different industries earn the same return, the industries that have lower dividend payouts experience higher growth. Before 2003 for example, Microsoft experienced very high growth and it did not pay a dividend. It is wrong to assume that the growth rate is the same for a declining return industry as it is for the high technology sector. Louis Chan and his coauthors recognize that different industries grow at different rates. Indeed the authors note that utility stocks have “relatively unexciting growth rates.”¹⁷
- Fourth, and most important, the GDP growth rate of 5.5% used by Ms. McShane cannot be sustained if one uses actual data on dividend payout ratios. The companies used in Ms. McShane’s sample have a retention rate of 29.33%. Using the growth rate formula discussed above, the return on equity for all companies in the utility industry would have to average 18.75% as shown below:

$$\begin{aligned}\text{Growth} &= \text{ROE} \times \text{Retention, or} \\ 5.5\% &= \text{ROE} \times 29.3\%, \text{ or} \\ \text{ROE} &= 5.5\%/29.3\% = 18.75\%.\end{aligned}$$

It would take the equivalent of a mathematical high wire act to justify anything approaching an 18.75% return.

I. –DCF Sensitivity Analysis

Q. Why have you prepared a sensitivity analysis on your DCF cost of equity estimate?

A. I have prepared a sensitivity analysis to investigate whether my results vary significantly if certain variables are changed. The variables I analyze include:

- Alternative samples of companies including only natural gas and only electricity wires companies.

¹⁶ Ibid, p. 649.

¹⁷ Ibid, Chan, L., Karceski, J and Lakonishok, J, 2003, p. 657.

- 1430 - Alternative return on equity estimates in the ROE multiplied by retention
1431 rate formula.
- 1432 - Use of a P/E ratio formula rather than the dividend discount model using
1433 analyst earnings growth rates.
- 1434 - Use of a two stage model where the return on equity moves to the cost of
1435 capital after five years.

1436

1437 The table below summarizes the sensitivity analysis. The models used in the
1438 analysis are included in CUB Exhibit 1.02. The table demonstrates that my DCF
1439 estimate of 7.95% does not vary significantly under a variety of different
1440 parameters.

1441

1442

Sensitivity Analysis	
Base Case	7.95%
Sample	
LDC	8.01%
Wires Only	7.78%
ROE in Growth Formula	
TTM	7.86%
Current	7.80%
P/E Formula versus DCF Formula	
DCF - Analyst Growth	8.60%
P/E - Analyst Growth	8.16%
Two Stage Model	
8% Long-Run ROE	7.36%
9.5% Long-Run ROE	7.90%

1443

1444

1445

1446 **Q. Describe how the cost of equity capital is derived from the P/E ratio in the**
1447 **above table.**

1448 A. The dividend discount model is only of a series of valuation models that can be
1449 used to infer the cost of equity capital required by investors. A well-known

formula used to explain the P/E ratio can also be used to derive the implicit cost of equity capital. Below is a formula that explains the P/E ratio in terms of key value drivers – the ability to earn more than the cost of capital and the ability to grow that difference:

$$P/E = [1-g/ROE]/[k-g]$$

In this formula, P/E is the forward price to earnings ratio, g is the growth rate in earnings, ROE is the earned return on equity and k is the cost of equity capital. If the ROE multiplied by retention rate is used to estimate growth it is easy to demonstrate that the formula produces the same results as the dividend discount model. However, in cases where the dividend payout ratio changes, the P/E formula produces a more accurate estimate of the cost of equity.

Q. How can the P/E ratio formula be used to compute the cost of capital?

A. Through re-arranging the P/E formula, one can compute the cost of equity from the P/E ratio. In this formula, the cost of equity capital is driven by growth, the return on equity, and the forward earnings per share:

$$k = [EPS \times (1-ROE/g)]/P + g$$

The formula has advantages because it does not depend on the dividend payout ratio, the cost of capital is less sensitive to growth rates, and the cost of equity capital is driven by the fundamental drivers of value.

VI. MEASUREMENT OF THE AMEREN COMPANIES' COST OF EQUITY CAPITAL USING THE CAPITAL ASSET PRICING MODEL (CAPM)

1479 **Q. How have you organized your discussion of how the CAPM can be used to**
1480 **measure the Ameren Companies' cost of equity capital?**

1481 A. I have separated my analysis of the Ameren Companies' cost of equity capital
1482 estimated from the CAPM into the following sections.

1483 1. **Summary** -- A brief description of the Ameren Companies' cost of equity
1484 capital that results from appropriate application of the CAPM. This shows
1485 that the Ameren Companies' cost of equity is at most 8% through
1486 appropriate application of the model.

1487 2. **Theoretical Discussion** -- A discussion of risk free rates, mean reversion
1488 of betas and the market risk premium that arise when implementing the
1489 CAPM in an unbiased manner. By working through the various
1490 theoretical concepts, I confirm that 8% does not understate the Ameren
1491 Companies' cost of equity and that Ms. McShane's estimate of 11.6% is
1492 far off the mark from any plausible application of the model.

1493 3. **Problems with Ms. McShane's CAPM Estimate:** A discussion of
1494 differences between my CAPM estimate of 8% and Ms. McShane's
1495 estimate of 11.6%. I show that her estimate comes from overstating all of
1496 the CAPM parameters -- the risk free rate, betas and the market risk
1497 premium.

1498

1499 *a. CAPM Summary*

1500

1501 **Q. Summarize the application of CAPM for determining the Ameren**
1502 **Companies' cost of capital.**

1503 A. The well known CAPM formula for the cost of equity of a security is $k_{i,t} = R_{f,t} +$
1504 $\beta_i \times \text{EMRP}$. In this equation:

1505

- $R_{f,t}$ is the risk free rate for the current period (t) and it is the only variable directly affected by movements in the overall cost of capital in the economy.
- β_i is the covariance between returns on the security and the market returns divided by the overall variance of market returns. This parameter is the only input affected by the risk of the security in question. The β_i parameter is not expected to vary over time unless there is a change in business and/or the financial risk of the company.
- EMRP is the expected return on a fully diversified portfolio of equity securities over and above the rate of return on risk free securities. This variable is a function only of aggregate preferences by people in the economy for risky investments versus risk free investments. It is not affected by current interest rates, the risk of the security, or movements in the overall stock market.

The CAPM formula is simple. It has a solid theoretical foundation in that non-diversifiable risks are related to return. Further, it is the most commonly applied model in estimating the cost of capital for valuation analyses.¹⁸ The CAPM has been used by the ICC and its Staff in estimating cost of capital for years and Ms. McShane used the formula in her testimony.

Given the widespread use of the model, I have made an estimate of the Ameren Companies' cost of capital using the CAPM. In making this estimate I have attempted to incorporate both current research and common methods used by practitioners. I also demonstrate that Ms. McShane's application of the model uses assumptions for each of the three input parameters that overestimate the Ameren Companies' cost of equity capital.

¹⁸ Armitage, S., 2005, p. 262.

Q. How does your cost of equity estimate from the CAPM model compare to the estimate made by Ms. McShane?

A. A reasonable CAPM based cost of equity range for the Ameren Companies is 8% or less. This number is well below Ms. McShane's application of the CAPM, which results in range between 11.12% and 12.13%. A comparison of the CAPM estimates and the components that result in the different numbers are shown on the table below¹⁹:

	My CAPM Number	Ms. McShane's Number	Basis for My Estimate
$R_{f,t}$	5.00%	5.50%	I use recent Market Rates
β_i	0.60	.75-.78	Removal of NICOR from sample; No reversion to 1.0 mean
EMRP	5.0%	7.5%-8.5%	I use the high end of current literature
Cost of Equity	8.00%	11.60%	

Q. What risk free rate have you used in your CAPM analysis?

A. I have used the 10-year Treasury Bond yield of 5.0% which is the approximate current yield and it is high relative to yields over the past few years.

Q. How have you derived the Beta estimate of .6 for the CAPM?

A. My estimate of .6 is based on the same sample as Ms. McShane. However it removes the mean reversion adjustment that assumes the risk of utility companies will increase and eventually become the same as the risk of typical companies in the economy. This adjustment is neither theoretically valid nor logical. Making the mean reversion adjustments is another example of how utility companies have made the cost of capital analysis obtuse in an effort to keep earning returns above the cost of capital.

Q. Why have you used a 5% EMRP in your CAPM?

¹⁹ Ms. McShane refers to a 6.2% market risk premium in his written text and he uses a 6.6% risk premium in Exhibit 8.9 where he calculates the CAPM.

1561 A. A review of the EMRP literature would justify a market premium for the CAPM
1562 as low as 3%, or even lower. Nevertheless, in an effort to ensure that I am not
1563 accused of selectively using low numbers, I have used an EMRP of 5%. This
1564 range encompasses the high end of the Fama study referred to earlier and is at or
1565 near the upper bound of virtually all of the recent research. The CAPM results,
1566 based on this upper boundary of the financial literature, illustrate just how far
1567 away from current research Ms. McShane's analysis really is.

1568

1569 ***b. Theoretical CAPM Issues - Introduction***

1570

1571 **Q. What are some of the problems with the theory and practical application of**
1572 **the CAPM?**

1573 A. Despite being a widely-used and simple model, there are a number of well known
1574 problems with the theory and practical application of the CAPM. Financial
1575 economists have studied the question of whether the model is consistent with
1576 actual market behavior for more than 40 years. The central question in this work
1577 is whether beta is in fact the only measure of risk that is required for evaluating
1578 cost of capital. Researchers performing sophisticated statistical analysis have not
1579 been able to verify that Beta is the only measure of risk that is priced in equity
1580 securities.

1581

1582 Problems with the CAPM theory are recounted by Ravi Jagannathan and Iwan
1583 Meier in their 2001 article "Do We Need CAPM for Capital Budgeting:"

1584

1585 The CAPM as a model has been seriously challenged in the academic literature:

1586

1587 [S]ince the critique by Fama and French (1992) there is consensus in the
1588 academic literature that the CAPM as taught in MBA classes is not a good model
1589 – it provides a very imprecise estimate of the cost of capital.... [T]here is
1590 overwhelming evidence in the academic literature that for over two decades

business schools have been teaching the wrong model – or at least recommending the use of the wrong inputs – for calculating the cost of capital.²⁰

In addition to theoretical problems with the model itself, there are issues associated with each of the three input parameters -- $R_{f,t}$, β_i and EMRP. Debates about the risk free rate concern whether there truly is a risk free security and what duration of government bonds should be used as a proxy for risk free investments. Controversy surrounding the beta involves whether statistical analysis of past prices is a reasonable reflection of prospective risk. Other beta issues include whether “raw” betas should be adjusted for mean reversion and how to adjust betas in a comparative sample when companies have different levels of leverage. The final parameter -- EMRP -- is subject to even more dispute than the other input parameters. Questions involving the level of the EMRP have been called “the most debated issue in finance”²¹ and “the premier question relating to the cost of capital, for theorists and practitioners alike.”²² A large body of research demonstrates that use of historic risk premia to measure the expected market returns is a biased approach that leads to over-estimation of the cost of equity.

The remainder of my discussion of the CAPM discusses the three inputs in the order of their controversy, beginning with the risk free rate, then moving to beta and finally addressing the risk premium.

c. Theoretical CAPM Issues – Risk Free Rate

Q. What are alternative approaches to computing the risk-free rate in CAPM cost of capital analysis?

²⁰ Jagannathan, R. and Meier, I. 2001, “Do We Need CAPM For Capital Budgeting?”, Kellogg School of Management, Finance Department, pp 1-3.

²¹ Koller, T., Goedhart, M., Wessells, D., 2005, Valuation Measuring and Managing the Value of Companies, Hoboken, New Jersey, John Wiley & Sons p. 297.

²² Armitage, S., 2005, p. 87.

1617 A. There are debates concerning implementation of the risk free rate parameter in the
1618 CAPM. Some suggest using long-term Treasury bond yields, some advocate
1619 short-term Treasury Bills and still others argue for use of the yield on inflation-
1620 indexed bonds plus the expected rate of inflation. The primary argument against
1621 using long-term Treasury Bond yields as a proxy for the risk free rate is that
1622 holders of long-term bonds accept inflation risk and those yields are therefore not
1623 risk-free. Further, during times when an inverted yield curve exists, the long-term
1624 treasury yield will produce a lower risk free parameter than the Treasury Bill rate.
1625 Those opposed to use of a short-term rate contend that the duration of cash flows
1626 from short-term investments does not match the duration of cash flows received
1627 from an investment in a stock.²³

1628

1629 Given the relatively flat current yield curve and the fact that the most common
1630 approach used by practitioners in applying the CAPM is to use the 10-year
1631 Treasury Bond yield,²⁴ I do not disagree with Ms. McShane's use of the 10-year
1632 yield in CAPM analysis in this case. However, I cannot accept her approach of
1633 forecasting interest rates for use as an input parameter into the CAPM.

1634

1635 **Q. Comment on the use of forecasted interest rates in the context of historic test**
1636 **year principles.**

1637 A. The notion behind use of a historic test year is to use actual accounting data, and
1638 then adjust certain revenue, expense and rate base items for fixed, known and
1639 measurable changes. A forecast of interest rates is certainly not fixed, known or
1640 measurable. If a historic test year is used in regulatory proceedings, one cannot
1641 pick and choose to apply speculative forecasts of macroeconomic variables to
1642 adjust historic data. If interest rates are forecast, then one could similarly argue
1643 that a future test year rather than a forecast test year should be used for other

²³ Koller, T., Goedhart, M., Wessells, D., 2005, pp. 296-297.

²⁴ Arzac, Enrique, 2005, p. 62.

elements of the case, including sales levels, dividend yields in the DCF, and other parameters.

Problems with the use of forecasted interest rates are illustrated by the Docket No. 02-0798. There, Ameren made an argument similar to Ms. McShane's argument in this case. Ameren suggested that current bond yields could not be used because interest rates were then at historic lows. The company advocated a forecast bond yield of 5.75% rather than the yields of 3.13% to 4.61% that occurred during the tenure of the case. The ICC rightfully dismissed Ameren's argument. It turns out that Ameren's forecast of a 5.75% bond yield was far higher than actual yields. The 10-year Treasury Bond yield on the day the order was signed on October 22, 2003 was 4.29% and the yields for more than two years after that date through December 2005 averaged 4.28%, 1.47% below Ameren's forecast. Thus, in the prior Ameren case, the ICC was correct in not speculating on future levels of interest rates. In its order, the ICC stated that, "The Commission is of the opinion that the mere existence of relatively low interest rates is not a sufficient basis" to use interest rates different from the current rate. (Order from 02-0798 at page 72) In sum, the prior Ameren case clearly demonstrates the danger in entering the interest rate forecasting arena.

d. Theoretical CAPM Issues – Beta

Q. Discuss the major issues with the second input parameter for the CAPM, the beta.

A. As stated above, the beta parameter is the only input that relates the cost of equity to the risk of a particular company in the CAPM. While the beta parameter is generally derived from historic data, it is, in theory, a forward-looking number. For example, Ogier et. al. state: "[i]n practice, the best way to estimate the beta of a firm is to calculate the historical covariance between the returns on the firm's

equity and returns from the market as a whole, and use this proxy for the future beta.”²⁵ Use of historic data to measure covariance means that the measured beta for a company can have anomalies which result in high or low numbers that are not representative of forward looking non-diversifiable risk. The statistical aberrations can occur when companies happen to have very bad or good news not related to the overall market. If this news drives the individual stock prices and the general market is moving in the same direction, the measured betas will be artificially high. If the market is moving in the opposite direction when the company specific news occurs, the measured beta will be too low.

Before discussing specific issues associated with measurement of beta for purposes of establishing the Ameren Companies’ cost of equity capital, I note that since beta is ultimately a function of financial and business risk, it should not be very different for companies that have similar levels of leverage in the same industry. Also, unless there are changes in business risk and/or financial risk, the beta parameter should not vary from period to period. This implies, for example, that beta parameter used in the NICOR case should not be significantly different from betas in this case.

Q. What technical issues arise in determining the appropriate beta for the Ameren Companies’?

A. Technical issues associated with implementation of the beta in the CAPM involve whether beta parameters estimated in a regression equation should be pushed towards one and whether betas from the comparative companies in a sample should be un-levered and then re-levered. The issue involving whether utility companies revert towards a mean of 1.0 is an example of obfuscation that occurs in cost of capital discussion. Common sense suggests that the risk of a regulated

²⁵ Ogier, T, Rugman, J., Spicer, L., 2004, *The Real Cost of Capital A Business Field Guide to Better Financial Decisions*, Great Britain: FT Prentice Hall, page 43.

1700 utility company, that is protected from competitive pressures and is providing an
1701 essential service, will not have the same risk as a typical un-regulated company.
1702 Yet utility company consultants and even commission staffs have bought into the
1703 proposition that the risk of utility companies will gradually become the same as
1704 the risk for other companies in the economy – i.e. the beta will move to a value of
1705 1.0.

1706
1707 **Q. Why do consultants hired by utility companies typically make an adjustment**
1708 **to move the beta towards 1.0 in their analysis?**

1709 A. Advocates on behalf of utility companies push up the measured risk of utility
1710 shares through making a mean reversion adjustment. The mean reversion
1711 adjustment originally comes from a well-known study by Blume in the 1970's
1712 suggesting that betas in the CAPM should be computed using a formula that adds
1713 a factor of 1/3 to 2/3 multiplied by the raw beta. This original Blume study was
1714 performed on a large sample of New York Stock Exchange common shares rather
1715 than on utility stocks.

1716

1717 The adjustment for betas is generally accepted in cost of capital literature for
1718 companies with betas above 1.0 because of a tendency of betas to revert to the
1719 mean of all companies in the economy. Statistical studies have demonstrated that
1720 “there appeared to be greater measurement error associated with the betas of
1721 extreme values.”²⁶ The mean reversion adjustment has generally been accepted
1722 for companies with observed high betas. The risk of companies with high betas
1723 often moves towards 1.0 over time due to statistical measurement problems and
1724 the tendency of high business risk companies to moderate as their business grows
1725 into business strategies more representative of a typical company.

1726

²⁶ Ogier, T, Rugman, J., Spicer, L., 2004, *The Real Cost of Capital A Business Field Guide to Better Financial Decisions*, Great Britain: FT Prentice Hall, page 54.

While the mean reversion may be appropriate for un-regulated companies, the mean reversion is far less acceptable for utility companies with betas of below 1.0.²⁷ Studies that have been performed on utility betas after the original Blume studies demonstrated a tendency to regress toward their grand utility mean and not 1.0. In the paragraphs below, I use the example of NICOR to illustrate how the mean reversion adjustment creates an upward bias in beta and the cost of equity capital. For example, Seth Armitage refers to a study by Gombola and Kahl that suggested that the adjustment for utility company betas should not push the statistic toward 1.0, but rather toward .5:

... the betas of most utility shares follow a mean reverting process, but around a mean that is close to .5. They and others also discuss the problem of ‘transient betas’ that are temporarily much larger or smaller than usual, due to an episode of a major fluctuation in share price.²⁸

Q. Are betas published by Value Line appropriate for use in the CAPM without adjustment?

A. No. Value Line computes its beta from a regression equation that measures an unadjusted beta. Then, Value Line adds an adjustment to move the beta toward 1.0 using the following equation²⁹:

$$\text{Adjusted beta} = 2/3 \times \text{Unadjusted beta} + 1/3 \times 1.0$$

or

$$\text{Unadjusted beta} = \text{Adjusted beta} \times 3/2 - 1/2$$

Since betas are below 1.0 for utility companies, the adjustment increases betas and it increases the estimated cost of capital.

²⁷ Armitage, S., 2005, p. 285.

²⁸ Ibid, p. 284.

²⁹ Patterson, C.S., 1995, *The Cost of Capital: Theory and Estimation*, Westport CT: Quorum Books, p. 130.

1755 When the mean reversion adjustment used by Value Line is made for utility
1756 companies, an implicit assumption is that (1) the betas are unstable; (2) the betas
1757 will eventually move to 1.0; and, (3) the risk of the utility companies will
1758 eventually move toward the overall risk of other companies. These assumptions
1759 are not reasonable as it has been clear that utility betas have been below 1.0 for
1760 decades. Making the mean reversion adjustment is convenient for those who
1761 advocate for higher utility cost of capital, but it is wrong.

1762

1763 **Q. Does the Value Line beta of 1.1 for NICOR demonstrate problems with the**
1764 **assumption of reversion to a mean of 1.0?**

1765 A. Yes. NICOR is a clear outlier in Ms. McShane's sample with a beta of 1.1 -- the
1766 next highest beta in her gas sample is .85. The NICOR case study does illustrate
1767 the principle behind adjusting betas when extreme events occur. More
1768 importantly the NICOR example demonstrates how the mean reversion
1769 adjustment towards 1.0 is not appropriate for regulated utility companies.

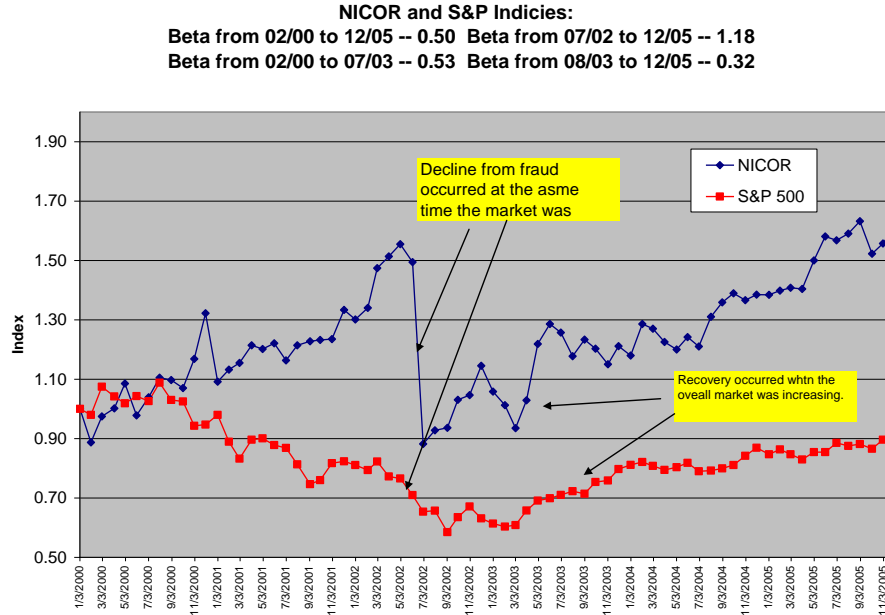
1770

1771 NICOR's high beta of 1.1 is an artifact from regression analysis because of the
1772 way the company experienced declines in its stock price when news of SEC
1773 investigations and allegations of fraud related to its manipulation of the
1774 performance based regulation program became public. This stock price decline
1775 happened to occur when the overall stock market was falling, as shown on the
1776 graph below. When NICOR's stock price subsequently recovered from the bad
1777 news, the stock market happened to also be increasing. This abnormality in
1778 historic stock prices caused NICOR's measured beta to be above 1.0, which is not
1779 representative of the on-going non-diversifiable business risk for the company.

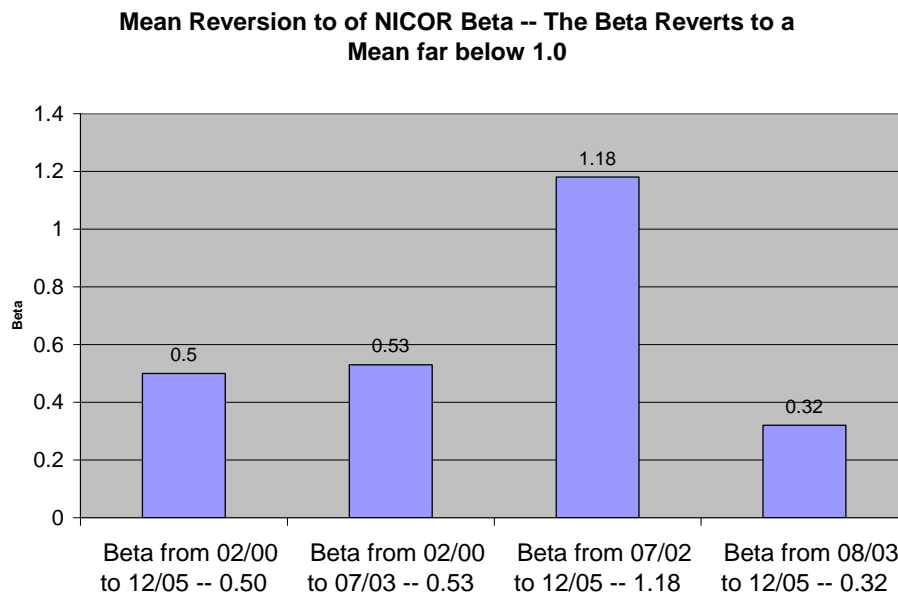
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The graph above reports betas for sub-periods within the total sample period beginning in 2001. The sub-period betas confirm that NICOR's beta has reverted back to a level far below 1.0 and that its beta was biased by the bad news. Before NICOR's fraud problems, its measured beta was .53. After the stock recovery its beta was .32. However, when the period surrounding the fraud publicity is the beginning of the measurement period, the beta is above 1.18.



The case of NICOR demonstrates why the mean reversion is made. NICOR had an abnormal event that had nothing to do with diversifiable risk. If the market happened to be increasing when the NICOR bad news occurred, the beta may have been negative. The raw beta measured from regression analysis does not make a correction for abnormal events.

The NICOR case confirms that using a mean reversion adjustment wherein betas are pushed towards 1.0 to correct statistical irregularity is inappropriate for utility companies. Instead, the statistical anomalies should push the beta back to the industry average beta for utility companies. The 1.10 beta obviously does not measure prospective risk and making a correction by moving the beta towards 1.0 would not help. The NICOR example effectively demonstrates that mean reversion adjustments of utility betas are not appropriate. These adjustments do not improve the measurement of beta but instead simply result in increased cost of equity numbers.

e. Theoretical CAPM Issues – Expected Equity Risk Premium

Q. Turning to the third input parameter to the CAPM, discuss some general issues with regard to the expected equity risk premium.

A. Before delving into details of applying a specific EMRP in this case, it is useful to review some big picture issues associated with the parameter:

- The EMRP is expressed in real terms and is not a nominal number. This means the EMRP does not increase or decrease when interest rates change or when the expected rate of inflation changes. It would be wrong, for example, to update this number in the midst of a case because of changes in the interest rate.

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- The EMRP comes from the general risk preferences of agents in an economy for equities relative to risk free securities. If people did not have risk aversion for equities relative to risk free bonds, the EMRP would be zero. This means changes in the EMRP are driven by changes in general preferences for equities relative to risk free securities. Because the EMRP comes from risk preferences, it should be stable over long time periods as risk preferences do not swing from month to month or year to year.

- Third, the EMRP is an expected number, rather than a number that can be directly measured from actual realized returns. The fact that the EMRP is an expected number means that it does not change when the stock market goes up or down because realized earnings change or because general economic activity is robust or depressed.

- Fourth, the EMRP is an economy wide number not unique to the Ameren Companies. Unlike Beta, which measures the risk associated with a specific company, the EMRP is the same whether it is used in valuing a paper company, gauging the rate of return for an oil project or assessing the share price of an airline company.

- Fifth, the EMRP has been the subject of a very large body of research. This research has been performed by academics who do not have a vested interest in producing a particularly high or a low risk premium number. The EMRP research is directly relevant to this and other regulatory proceedings because the EMRP is not unique to the Ameren Companies, is an expected number difficult to calculate, and is not expected to change over short time periods.

Q. What is the implication for this case of the above five big picture points?

1870 A. The major implication of the above points is that it would be very presumptuous
1871 and even arrogant to compute a different EMRP than the number that has been
1872 studied so intently by economists, investment banks and other valuation
1873 practitioners. Attempting to compute an independent EMRP for purposes of this
1874 case and ignoring current research would be analogous to making an independent
1875 forecast of the GDP or interest rates. The source for EMRP should instead be a
1876 review of the body of literature published on the subject.

1877

1878 **Q. How have you organized the summary of EMRP research?**

1879 A. Since the EMRP has been subject to so much research, I do not suggest that my
1880 summary below is comprehensive. Instead I have attempted to highlight
1881 representative broad conclusions from the literature. In summarizing the EMRP
1882 research I divide the discussion into the following components:

- 1883 • General conclusions on the level of EMRP from current studies;
- 1884 • Computation of the EMRP from consumption theory;
- 1885 • Use of historic realized returns from sources such as Ibbotson to estimate the
1886 EMRP;
- 1887 • Application of the DCF and other forward-looking models to directly estimate
1888 the EMRP; and
- 1889 • Computation of the EMRP from survey data.

1890

1891 **Q. What are some of the general comments on EMRP found in the literature?**

1892 A. The overwhelming conclusion from current research on the EMRP is that the
1893 return expected by investors and appropriate for use in the CAPM is far lower
1894 than the actual returns in the commonly referred to Ibbotson study quoted by Ms.
1895 McShane. Some general statements that represent current general opinions on the
1896 EMRP include the following:

1897

1898 Enrique Arzac recaps a wide body of research by stating “We show that both the
1899 historic record, financial theory, and prospective estimates based on stock prices

1900 and growth expectations, all indicate that the future equity premium in developed
1901 capital markets is likely between 3 and 5%...”³⁰

1902
1903 Seth Armitage summarizes many different studies by noting: “Consensus is
1904 lacking at present on the best way of estimating the equity premium, and
1905 reasonable estimates lie in the range of 1% or 5%...”³¹

1906
1907 Koller et al. describe the general biases in EMRP: “Historical estimates found in
1908 most textbooks (and locked in the mind of many), which often report numbers
1909 near 8% are too high for valuation purposes because they compare the market risk
1910 premium versus short-term bonds, use only 75 years of data, and are biased by the
1911 historical strength of the U.S. market.”³²

1912
1913 Grinold and Kroner Koller conclude that “the equity risk premium is about 2.5%.
1914 We don’t claim that this estimate is the only one that can be thoughtfully
1915 defended; rather, we argue that it is reasonable and supported by logic and
1916 evidence. We also critically evaluate the arguments supporting a zero negative
1917 risk premium, and those supporting a risk premium as high as it has historically
1918 been (5% or more).”³³

1919

1920 **Q. What are the implications from consumption theory regarding the EMRP?**

1921 A. Since an article was published in 1985 by Mehra and Prescott, a phenomena
1922 known as the ‘equity risk premium puzzle’ has been studied by economists. The
1923 Mehra and Prescott puzzle is described by Claus and Thomas as follows.

1924
1925 “Their model indicates that the variance–covariance matrix of aggregate
1926 consumption and returns on stocks and bonds, when combined with reasonable
1927 risk-aversion parameters, implies equity premium estimates that are less than one
1928 percent. Despite subsequent efforts to bridge this gap, concerns remain about the
1929 validity of the Ibbotson estimate...”³⁴

1930
1931 Enrique Arzac explains that the equity premium puzzle suggests “the high-equity
1932 premium observed over the period 1889 to 1978 cannot be reconciled with an
1933 asset pricing model in which economic agents exhibit positive rates of time
1934 preference....”³⁵

³⁰ Arzac, Enrique, 2005, p. 35.

³¹ Ibid, p. 299.

³² Koller, T., Goedhart, M., Wessells, D., 2005, Valuation Measuring and Managing the Value of Companies, Hoboken, New Jersey, John Wiley & Sons p. 306.

³³ Grinold, R., Kroner, K, D., 2002, p 137.

³⁴ Claus and Thomas, 2001, p. 1630.

³⁵ Arzac, Enrique, 2005, p. 41.

1935 **Q. What is the argument for using historic realized returns published by**
1936 **Ibbotson and Associates in estimating the prospective expected risk**
1937 **premium?**

1938 A. The idea of using historic premia as measured by Ibbotson comes from the notion
1939 that the EMRP should be constant over time, only changing with risk preferences
1940 in the economy. If the expected overall real market premium is constant and
1941 realized returns were always above the expected returns, stock prices would
1942 eventually adjust (increasing to drive down returns) so that investors would
1943 eventually earn their expected return. While historic returns were once the norm
1944 in EMRP estimates, the general consensus is now that these numbers are far too
1945 high. Below are a few examples from cost of capital literature describing how
1946 actual returns are not appropriate in measuring the expected risk premium:

1947
1948
1949 Enrique Arzac refers to research by Blanchard who “developed a dynamic model
1950 of the expectations of real returns on stocks and bonds. He found that the risk
1951 premium during the 1930’s and 1940’s was unusually high ranging from 3 to 5%
1952 in the early 1930’s to more than 10% in the 1940’s. Afterwards, it started a
1953 gradual decline with some relatively minor fluctuations and reached between 2
1954 and 3% in the early 1990’s.”³⁶

1955
1956 Claus and Thomas emphasize the notion that historic returns exceed the expected
1957 amounts: “Despite substantial variation in the underlying fundamentals across
1958 markets and over time, observing that every one of our 69 country-year estimates
1959 lies well below eight percent suggests that the Ibbotson estimate is too high for
1960 our sample period.”³⁷

1961

1962 **Q. Has cost of capital research addressed reasons why historic observed market**
1963 **premia overstate the expected market returns?**

1964 A. Yes. A number of explanations have been developed to explain why historic
1965 numbers such as those reported by Ibbotson are so high. The quotes below
1966 describe how autocorrelation of returns, survivorship bias and underestimation of
1967 inflation risk explain the high historic premiums:

³⁶ Ibid, Page 41.

³⁷ Claus and Thomas, p. 1630.

1968 Koller et al state that "...the general consensus is that the aggregate stock market
 1969 exhibits negative autocorrelation. In this case, the arithmetic mean is biased
 1970 upward..." They also discuss survivorship bias: "...If we subtract a 1% to 2%
 1971 survivorship bias from the long-term arithmetic average of 5.5%, the difference
 1972 implies the future range of U.S. market risk premium should be 3.5% to 4.5%."³⁸
 1973
 1974 Enrique Arzac presents data from Sigel (2002) that the nominal arithmetic risk
 1975 premium was 5.9% from 1926-2002 while it was only .2% from 1982-2002. In
 1976 explaining the historic risk premium data, Arzac states that ... recent data for
 1977 estimating the equity premium are not difficult to construct. For example,
 1978 investors seem to have underestimated the effect of inflation on bond returns prior
 1979 to 1980 and demanded low returns on bonds, which may have resulted in an
 1980 exaggerated risk premium."³⁹
 1981
 1982 Grinold and Kroner comment on the Ibbotson studies as follows: "Ibbotson and
 1983 Chen ... assume that the future income return will be the same as the historic
 1984 income return. So they are very bullish on equities, but their bullishness is based
 1985 largely on an assumption that the dividend yield will exceed 4%. This seems
 1986 highly unlikely, even irrational, given that it is currently much less than that."⁴⁰
 1987
 1988 **Q. Has the EMRP been estimated using the DCF and related forward-looking**
 1989 **models?**
 1990 A. Yes. Various studies have attempted to directly estimate expected market
 1991 premiums from the DCF and other models. These analyses have attempted to
 1992 avoid the upward bias in cost of capital estimation that occurs if one uses
 1993 forecasts of earnings growth from investment analysts. I have already referred to
 1994 two of the papers, written by Fama and French and Claus and Thomas. Estimated
 1995 market risk premiums found in these studies are summarized in the following
 1996 excerpts:
 1997
 1998 Seth Armitage describes the DCF studies as follows: "The arithmetic mean real
 1999 premium between 1900 and 2000 was ... 7.0% for the United States, measured
 2000 against the yield on long-term bonds. But a simple forward looking estimate
 2001 based on applying the dividend discount model to the market suggests a risk
 2002 premium of 3% to 4%. This is why many people do not expect the premium in
 2003 the future to be as large as it has been in the past, especially in the second half of

³⁸ Koller, T., Goedhart, M., Wessells, D., 2005, p. 303.

³⁹ Arzac, Enrique, 2005, p. 43.

⁴⁰ Grinold, R., Kroner, K, D., 2002, p 143.

2004 the twentieth century. They place more faith in reasonable expectations about the
2005 future than in outcomes observed in recent decades. Furthermore, several
2006 researchers have argued recently that investors did not expect premiums as large
2007 as they got in the twentieth century. Armitage concludes that Most of the studies
2008 indicate a range for historic ex ante premiums ... of between 1.5% and 4.5% --
2009 considerably below the actual arithmetic mean premium since 1920...”⁴¹

2010
2011 Enrique Arzac uses a DCF model to estimate the equity market premium of
2012 between 3.08% and 3.32%.⁴²

2013
2014 In their widely cited 2002 article, Fama and French state that “the equity premium
2015 estimates from the dividend and earnings growth models, 2.55 percent and 4.32
2016 percent, are far below the estimate from the average return, 7.43 percent....The
2017 expected return estimates from the dividend and earnings growth models are more
2018 precise than the average return. The standard error of the dividend growth
2019 estimate of the expected return for 1951 to 2000 is 0.74 percent, versus 2.43
2020 percent for the average stock return....The earnings growth model is not,
2021 however, clearly superior to the dividend growth model.”⁴³

2022

2023 **Q. How has the EMRP been estimated from surveying investor expectations?**

2024 A. An alternative method for estimating the EMRP is to ask investors what they
2025 expect to earn on a mutual fund consisting of the S&P 500. Some of the EMRP
2026 estimates from this source are recounted by Tim Ogier, John Rugman, and
2027 Lucinda Spicer in their 2005 publication:

2028
2029 “In the US, Merrill Lynch publishes ‘bottom up’ expected returns on the Standard
2030 and Poor’s 500, derived by averaging expected return estimates for stocks in the
2031 Standard & Poor’s 500....In recent years, the Merrill Lynch expected return
2032 estimates have indicated an EMRP in the region of 4% to 5%.”⁴⁴

2033
2034 “The Value Line projected market risk premia are somewhat more volatile than
2035 those from the Merrill Lynch DDM model. In recent years they have generally
2036 ranged from 2% to 6%....”⁴⁵

2037
2038 Greenwich Associates had published the results of an annual survey of pension
2039 plan officers regarding expected returns on the Standard and Poor’s 500 for a

⁴¹ Armitage, S., 2005, p. 281.

⁴² Arzac, Enrique, 2005, p. 45.

⁴³ Fama and French, 2002.

⁴⁴ Ogier, T, Rugman, J., Spicer, L., 2004, p 74.

⁴⁵ Ibid, p 75.

five-year holding period. The Greenwich Associates survey has generally indicated and EMRP in a 2%-3% range.”⁴⁶

Claus and Thomas also cite investor expectations. They summarize the information as follows: “Surveys of institutional investors also suggest an equity premium substantially below eight percent (e.g., Burr (1998)), and there are indications that this belief has been held for many years (e.g., Benore (1983)) . Also, the weighted average cost of capital used in discounted cash flow valuations provided in analysts’ research reports usually implies an equity premium below five percent.”⁴⁷

f. Ms. McShane’s CAPM Analysis – Risk Free Rate

Q. What risk free rate does Ms. McShane apply in the CAPM Model?

A. Ms. McShane uses a forecast of the effective yield on long-term Treasury Bonds derived from her prediction of how the real interest rate will change in the future. This produces a risk free rate of 5.5%:

The yield on the long-term real return (inflation-indexed) government bonds – which provides a proxy for the real cost of capital – is also at relatively low levels (2.1%)... In the long run, the real cost of capital ... is approximately 3.2%. Combining the long-term expected inflation rate (2.2%) with a long term real cost of capital of 3.2% indicates a fundamental value for 10-year Treasuries of approximately 5.5%. (McShane testimony at line 814)

Q. Is Ms. McShane’s use of a forecasted bond yield appropriate as an input to the CAPM?

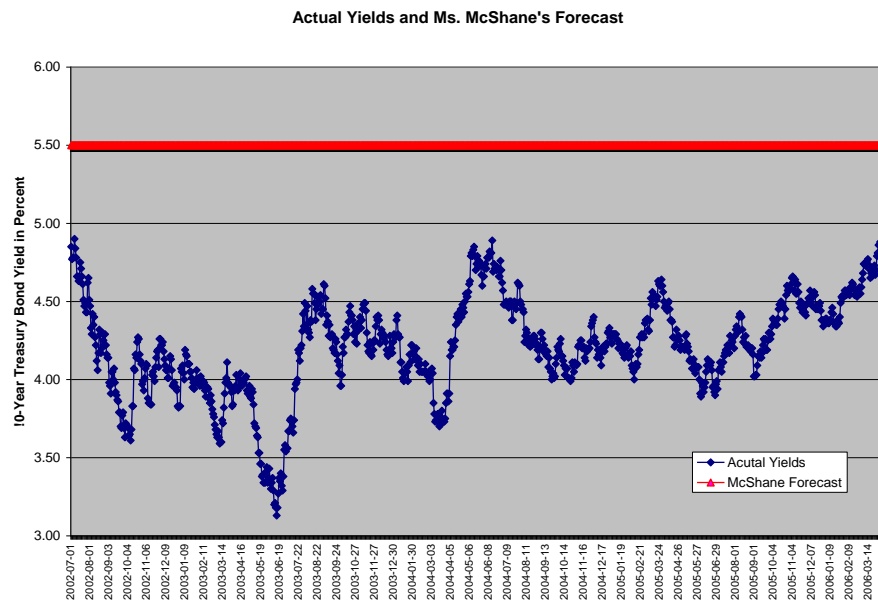
A. No. Use of a forecast is inconsistent with the notion of a historic test year and Ms. McShane’s forecast of interest rates is not consistent with actual data. Even if one were to accept the use of forecasted interest rates in regulatory proceedings, one should use market-based measures such as forward rates implied in the current yield structure, or interest rates in forward markets.

⁴⁶ Ibid, p 75.

⁴⁷ Claus and Thomas, 2001, p. 1631.

Q. Does Ms. McShane's statement that interest rates are currently at historic lows correspond to actual data?

A. No. The graph below compares Ms. McShane's interest rate forecast of 5.47% with actual 10-year Treasury Bond yields over the past three and a half years since the middle of 2002.⁴⁸ The graph demonstrates that Ms. McShane's forecast is far above the historic levels and is not a reasonable number to use in rate proceedings.



g. Ms. McShane's CAPM Analysis – Beta

Q. What Beta does Ms. McShane use in her CAPM analysis?

A. Ms. McShane uses a median and average of equity betas from value line of .75 and .78 for LDC's and .75 from her natural gas sample. Her sample of twelve LDC's includes NICOR, which as explained above has a beta of 1.10. NICOR should not be considered because it is an obvious outlier and is not

⁴⁸ Source: St. Louis Federal Reserve Bank, Economic Data - FRED II (www.research.stlouisfed.org), series ID DGS10.

2100 representative of prospective distribution company risks, given its low operating
2101 risk, its low debt leverage and its high earned return on equity.

2102

2103 **Q. Is a Beta of .78 or .75 plausible for a company with the prospective risk**
2104 **profile of Ameren after rates become effective in January 2007?**

2105 A. No. As discussed above, given that the Ameren Companies will have virtually no
2106 risk related to generation purchases and will have less risk associated with
2107 residential usage. Given the lower risk, a beta close to 1.0 is simply not plausible
2108 for the Ameren Companies. The Ameren Companies will have much less
2109 business risk than a typical company in the economy (that has a beta of 1.0) when
2110 rates are effective in 2007. Ms. McShane's beta estimates of .78 or .75 are also
2111 higher than betas estimated by the ICC staff in recent cases. In the last Ameren
2112 case the Commission found that a beta of .62 was appropriate. (Ameren order in
2113 docket 02-0798 at page 85) In the NICOR case, Staff used a beta of .66 (McNally
2114 direct testimony in 04-0779 at page 27). Since betas should be stable if the nature
2115 of a business does not change, Ms. McShane's implicit suggestion is that the betas
2116 used by the ICC and its Staff in these two earlier cases were too low.

2117

2118 **Q. What would the Value Line beta be in Ms. McShane's sample if the mean**
2119 **reversion adjustment were not included?**

2120 A. I have applied the Value Line beta equation above to remove the mean reversion
2121 factor from Ms. McShane's sample. Without NICOR, the average beta in Ms.
2122 McShane's sample is .74. After taking away the mean reversion adjustment her
2123 sample produces a beta of .61, which I round to .6. A beta of .6 is still high, but a
2124 more reasonable beta estimate for the Ameren Companies because utility betas do
2125 not tend to be volatile and there is no a priori reason for betas to move closer to
2126 1.0.

2127

2128

2129 *h. Ms. McShane's CAPM Analysis – EMRP*

2130

2131 **Q. What EMRP does Ms. McShane use in her analysis?**

2132 A. Ms. McShane uses estimates of 7.6% from historic data and a forward-looking
2133 estimate of 8.4%, which she describes as follows:

2134

2135 The forward-looking market premium may be determined by an
2136 application of the discounted cash flow model to the S&P 500. To
2137 estimate the DCF cost for the S&P 500, the I/B/E/S consensus of
2138 analysts' forecasts of normalized earnings growth for the companies in
2139 the market index was used as a proxy for investor expectations of
2140 long-term growth. The average October 2005 dividend yield for the
2141 S&P 500 was 1.9%. *The corresponding I/B/E/S consensus forecast*
2142 *of five-year normalized earnings growth rates for the S&P 500 index*
2143 *was 11.8%.* The resulting expected market return is 13.9%. At a
2144 forecast 10-year Treasury note yield of 5.5%, the forward-looking
2145 estimate of the market risk premium would be approximately 8.4%.
2146 (McShane testimony at line 930)

2147

2148 **Q. How does Ms. McShane's EMRP estimate compare with research on the**
2149 **subject?**

2150 A. The 7.6% and 8.4% EMRP are far higher than even the highest end of estimates
2151 made in the financial literature. If Ms. McShane's EMRP estimate were correct,
2152 it would render a massive amount of research invalid. No amount of obfuscation
2153 can mask the fact that her EMRP is inconsistent with current practice and theory.
2154 The 11.8% I/B/E/S forecast of earnings also confirms the optimism of analyst
2155 forecasts and demonstrates why I/B/E/S growth rates should not be used in DCF
2156 analysis.

2157

2158 **Q. Have other researchers commented on the use of analyst growth estimates as**
2159 **the basis for EMRP estimates?**

2160 A. Yes. The following quote from Grinold and Kroner effectively describes use of
2161 analyst estimates as "preposterous" as a basis for computing EMRP:

2162

2163 “Others, like Harry S. Dent consider even 5% [EMRP] to be low.
2164 He projects a Dow Jones Industrial Average to skyrocket (to, at least
2165 21,500 and as high as 35,000) around the year 2009, which implies a
2166 geometric return of about 13% over the decade....But some – in
2167 particular, many Wall Street equity analysts – make even Dent look
2168 like a pessimist. The average long-term earnings growth rate
2169 expected by Wall Street analysts on the stocks in the S&P 500 is
2170 currently about 13% nominal, or over 10% real! *This is*
2171 *preposterous, especially when you consider that the decade with the*
2172 *fastest growth since the 1870, was the 1920’s, with real earnings*
2173 *growth rates of only 7%.* But this optimism is not surprising, given
2174 that Wall Street analysts consistently forecast higher earnings than
2175 corporate America has been able to deliver.”⁴⁹ (emphasis added)

2176
2177 **Q. Can the 5.5% GDP nominal growth rate estimate be used instead of the**
2178 **11.8% analyst estimate in deriving the EMRP?**

2179 A. Yes. While the nominal GDP growth is inappropriate for use in growth rates for
2180 regulated utilities, it is more reasonable for use in estimating aggregate earnings
2181 growth for all companies in the S&P 500. Problems with Ms. McShane’s use of
2182 analyst growth estimates rather than GDP in the EMRP calculation are described
2183 in the following excerpts from the Claus and Thomas article that I have referred to
2184 several times. The authors discussed an approach similar to the Ms. McShane’s
2185 method, which is designated “g5” in the following excerpt:

2186
2187 Research using the dividend growth model has often assumed that g
2188 equals forecasted earnings growth rates obtained from sell-side equity
2189 analysts, who provide earnings forecasts along with their buy/sell
2190 recommendations. These forecasts refer to earnings growth over the next
2191 “cycle,” which is commonly interpreted to represent the next five years.
2192 Consequently, we refer to this earnings growth forecast as g5....[O]thers
2193 have balked at using g5 as a proxy for g (e.g., Malkiel (1996), Cornell
2194 (1999)) because it appears unreasonably high at an intuitive level, and
2195 have stepped down assumed growth rates. *Forecasted values of g5 for*
2196 *the United States over our sample period, which are close to 12 percent*
2197 *in all years, exceed nominal growth in S&P earnings, which has been*
2198 *only 6.6 percent since the 1920s (Wall Street Journal, June 16, 1997,*
2199 *“As stocks trample price measures, analysts stretch to justify*
2200 *buying”)*....Even if unbiased estimates of near-term earnings growth
2201 (g5) were available, ... those estimates as well as observed growth rates

⁴⁹ Grinold, R., Kroner, K. D., 2002, p 143.

are conceptually different from g, the hypothetical dividend growth that can be sustained in perpetuity.⁵⁰

Q. How does Ms. McShane’s forward looking EMRP estimate compare to other valuation analysts who have developed forward looking equity analyses?

A. In the theoretical discussion above I referred to two authors who constructed forward-looking EMRP estimates using a DCF approach. Enrique Arzac developed an equity forward-looking premium of between 3.32% and 3.08% using the S&P 500 and Koller, et. al. published an estimate of 5% using a P/E ratio analysis.

VII. VERIFICATION OF COST OF EQUITY CAPITAL USING MARKET TO BOOK ANALYSIS

Q. What subjects do you address in this section of your testimony?

A. I consider various issues with respect to market to book ratios that exceed 1.0 for utility companies. The sub-parts of this section include:

1. **McShane Comments on Market to Book Ratios** – a discussion of Ms. McShane’s proposition that rates set by the Commission should allow a company to earn more than its cost of capital because a rate level that results in a declining market to book ratio is “not logical.” I demonstrate that these statements are unbecoming even for an aggressive utility company such as Ameren. I discuss how her suggestions to set regulated prices through multiplying the nominal cost of capital by replacement cost of assets has long ago been rejected because it obviously allows investors to receive compensation from inflation twice.
2. **Market to Book Ratio Theory** – an explanation of why market to book ratios of 1.0 do in fact mean that utility companies are earning their cost of

⁵⁰ Claus, J and Thomas, J, 2001, “Equity Premia as Low as Three Percent? Evidence from Analysts’ Earnings Forecasts for Domestic and International Stock Markets”, Journal of Finance, 55, No 5., pp. 1629-1666.

capital and rate levels are efficient and fair. The market to book ratio principle applies whether companies in the industry are currently earning more than their cost of capital and it applies even if stock prices would decline from setting returns equal to the cost of capital.

3. **Market to Book Ratios and Returns on Equity** – demonstration that the principle determinant of market capitalization of a share is the profit and cash flow of the company. This means that the market to book ratio is driven primarily by the return on equity of a company and that market to book ratios that differ from 1.0 are the result of companies not earning their cost of capital.

4. **Market to Book Ratios and Cost of Capital Estimation** – an analysis that uses market to book ratios to derive a fair return on equity. This demonstrates that the cost of capital is as low as 6.48% for the market to book ratio to be 1.0.

a. McShane Comments on Market to Book Ratios

Q. Does Ms. McShane suggest that a market to book ratio of 1.0 would be evidence that a fair return is established in this case?

A. No. Ms. McShane states that setting a return required by investors – the cost of capital – to the book value of rate base would not be “logical” because stock prices would decline. Her proposition that regulators should set rates above the cost of capital is demonstrated in the following statement made in her testimony:

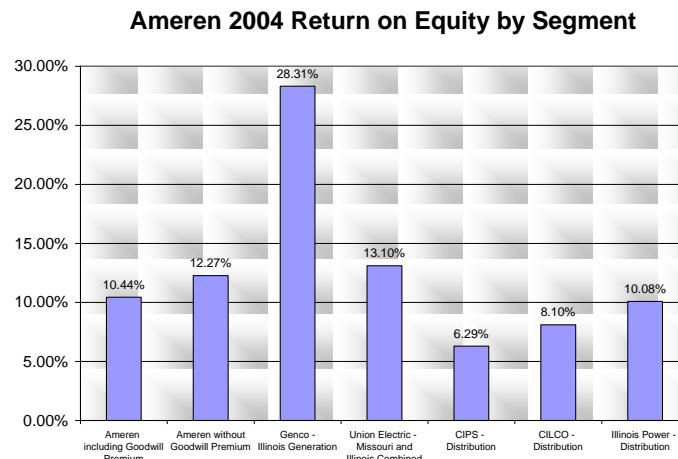
If investors expected regulators to set allowed returns on book equity at 9.75% [the DCF *cost of capital* estimate], the market price would fall to book value. Investors would, as a result, experience a capital loss of over 40%. The notion that investors are willing to pay a price that is 1.75 times book value only to *experience a capital loss of over 40% is not logical*. (McShane testimony, line 540.)

Ms. McShane’s statement is radical. She is suggesting that rates should not be

determined on the traditional basis of allowing a utility company to have the opportunity to earn its cost of capital only because stock prices may decline. This is analogous to a Ratepayer advocate arguing that rates should never increase because the wealth of consumers would decline. Of course, this is illogical. The regulatory compact that has existed for decade ensures that investors are provided with the opportunity to earn a reasonable return on their investment in providing service to their customers. Ms. McShane's effort to suggest that investors should earn more than their cost of capital should not be taken seriously. However her propositions add even more complexity and obfuscation to the cost of capital analysis, which unfortunately lengthens the discussion of arguments in this case.

Q. Ms. McShane argues that market to book ratios of 1.0 imply an illogical 40% price decline. Does this argument apply to the Ameren Companies?

A. No. Even though Ameren Corporation is realizing a market to book ratio of 1.95 (without goodwill), setting returns for the Ameren Companies equal to the cost of capital would not result in a decline in Ameren's share value. This is because Ameren is earning very high returns on its generation segment, which will not be affected by this rate changes in this delivery services case. The graph below shows that Ameren's generation segment is earning more than a 28% return on equity.



2281 In addition to earning a very high return on the generation portion of its business,
2282 if stockholder impacts are to be considered, then the commission should account
2283 for the enormous benefits that shareholders have realized since passage of the
2284 restructuring Act that I discussed above, not to mention the tremendous upside
2285 potential available to the generation segment under the approved auction
2286 procurement process.

2287

2288 **Q. Comment on Ms. McShane's position that the market to book ratio should be**
2289 **above 1.0 because the market value of non-regulated companies tracks**
2290 **replacement cost rather original cost.**

2291 A. Ms. McShane posits that non-regulated companies should have q-ratios of above
2292 1.0, and thus realize value equal to replacement cost rather than original cost. She
2293 further opines that regulated utility companies should earn returns on the same
2294 basis. For example she states:

2295

2296 The total repriced equity is a proxy for replacement cost. The total
2297 repriced equity is then compared to the original cost book value of the
2298 equity to arrive at an estimate of the replacement cost/book value ratio.
2299 (McShane testimony at line 699)

2300

2301 Ms. McShane's assertions that utility companies should be granted a nominal
2302 return on replacement cost is based on misconceptions of both the regulatory
2303 process and capital budgeting for unregulated companies:

2304

2305 1. Even in the debate about original cost versus replacement cost that was
2306 resolved decades ago when commissions including the FERC did not accept
2307 trended original cost, proponents of replacement cost did not suggest that the
2308 return on the inflated asset base should also include an inflation component in
2309 the return. If a nominal cost of capital is applied to an inflated asset base,
2310 investors are clearly compensated for inflation twice and therefore earn more

than their cost of capital. Her suggestion to allow “double dipping” has not been, and indeed should not be, part of the fair value discussion.

2. If unregulated companies are expecting to realize gains from increases in asset value, they will accept lower cash flow in the early years of the life of an asset. Of course, this implies that investors will accept less than their cost of capital in exchange for returns above the cost of capital in later years. However, as with regulated companies, investors in unregulated businesses do not realize ex ante returns above the cost of capital. Ms. McShane’s suggestion that allowing Ameren to earn returns above the cost of capital to mimic a competitive model is simply wrong.

In sum, all of Ms. McShane’s adjustments to increase the return above the cost of capital should not be considered by the Commission. The long-standing principle of setting rate at levels that allow investors to earn their cost of capital on original cost rate base leads to efficient and equitable outcomes. This is precisely why it has withstood the test of time.

b. Market to Book Ratio Theory

Q. Explain why the market value of a regulated utility company equals the book value when a company is earning its cost of capital?

- A. A basic proposition of utility cost of capital theory is that if a company is expected to precisely earn its cost of capital on a continuing basis, the market value will equal the book value. If an investment earns exactly its cost of capital, then the present market value of the investment will be just equal to the amount of the investment. In the case of a utility company, the rate base approximates the investment in debt and equity. This means that if the company is earning exactly its cost of capital, then the present value of the earnings stream, discounted at the cost of capital, will be the same as the rate base. In original cost ratemaking, rates

are set at a level that allows the company to recover its embedded cost of debt capital as well as its opportunity cost of equity capital. Here, the weighted average cost of capital consists of embedded cost of debt, which is used to compensate the book value of debt, and the market value of equity is set equal to the book value of equity. If the return on equity is set exactly equal to the cost of equity for a utility company, the market to book value will be approximately 1.0.

Q. Is the notion that a company with a market to book ratio of one is earning its cost of capital accepted in finance literature?

A. Yes. A couple of references from recent writings on cost of capital demonstrate that it is commonly accepted that a market to book ratio of 1.0 implies a company is earning its cost of capital. For example, Seth Armitage in his text, “The Cost of Capital” states:

“The ... aim of regulation implies that the market value of the company should be equal to the book value, at least immediately after a price-setting review If market value exceeds book value, it suggests that the actual rate of return exceeds the cost of capital, and vice versa.”⁵¹

Eugene Fama and Kenneth French in their 2002 article on the equity premium use the principle that a market to book ratio of 1.0 implies a company is earning its cost of capital when they note that ratios of above 1.0 are evidence of earned returns above the cost of equity:

“Since, on average, the market value of equity is substantially higher than its book value, it seems safe to conclude that on average, the expected return on investment exceeds the cost of capital.”⁵²

⁵¹ Armitage, S., 2005, p. 324.

⁵² Fama and French, 2002, p 644.

2371 *c. Drivers of Market to Book Ratios*

2372
2373 **Q. Are market to book ratios driven by factors other than the variance between**
2374 **returns and the cost of equity capital?**

2375 A. Yes. The difference between the cost of capital and the current level of earned
2376 return on equity is not the only factor that explains market to book ratios that
2377 deviate from 1.0. However, my analysis below demonstrates that the earned
2378 return is by far the most significant driver of market to book variation. This
2379 confirms the basic value proposition that market value is driven by profits and
2380 cash flow. Market values that deviate from cash flow have not been sustainable.
2381 The clearest example of this is the Internet “bubble”, where “high tech”, or “dot
2382 com”, shares did not trade on the basis of income or cash flow.

2383
2384 **Q. How have you evaluated the relationship between earned returns and the**
2385 **market to book ratio?**

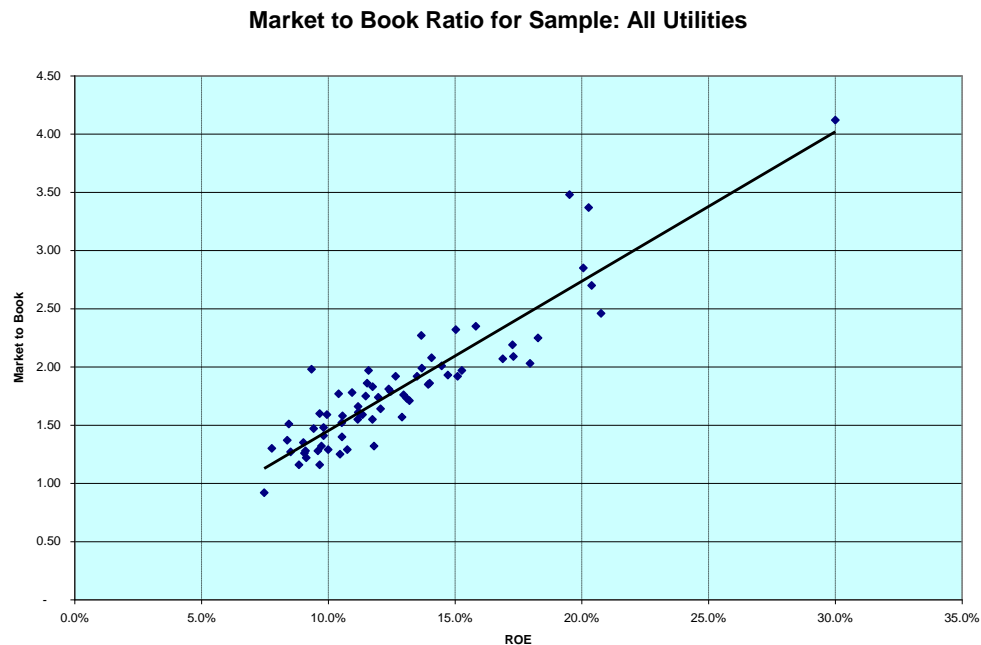
2386 A. I have created a database that tracks the market to book ratios and returns on
2387 equity for a large set of utility companies. These companies include electric and
2388 natural gas distribution companies that are covered by Value Line Investment
2389 Survey and the Yahoo! Finance website. The date I downloaded the data is
2390 3/19/2006. I have excluded a few companies that have significant upstream oil
2391 and gas operations and that have recently undergone financial restructuring. After
2392 removing these companies, the database includes 70 utility firms. The market to
2393 book ratio, the forward return on equity and other statistics were obtained from
2394 Yahoo! while the Betas were taken from Value Line. The scatter plot below
2395 shows that the market to book ratio for utility companies is generally above 1.0.
2396 The average market to book value is for all companies in the database is 1.80.

2397
2398 **Q. Given that the market to book value is above 1.0, what is the implication**
2399 **regarding utility company earned returns?**

A. The implication is very simple. Utility companies are earning more than their cost of capital. The fact that companies are earning more than their cost of capital is not something that utility companies, Wall Street, cost of capital consultants and even regulatory commissions like to acknowledge, but it is a basic fact.

Q. How does the market to book ratio relate to the earned return on equity?

A. The scatter chart below compares the earned return on equity with the market to book ratio for each of the companies in the sample. The graph illustrates the strong positive relationship between the two statistics. The trend line on the graph shows how one can develop a relationship between the market to book ratio and the earned return to derive the return on equity that is commensurate with a market to book ratio of 1.0.



Q. How have you computed an equation to relate the market to book ratio to the return on equity?

A. I have constructed ordinary least squares regression equations using the market to book ratio as the dependent variable and the return on equity, debt leverage, beta,

earnings growth and size are independent variables. The only variable that is significant in this regression is the return on equity. Therefore, I have used the simple regression of market to book ratio and return on equity for my analysis. The R-squared of this regression demonstrates that 84% of the variation in market to book ratio is explained by variation in return on equity. The regression analysis produces the following equation for the market to book ratio as a function of the return on equity:

$$\text{Market to Book} = .1677 + 12.84 \times \text{ROE}$$

d. Use of Market to Book Ratio Equation to Estimate the Cost of Equity

Q. How have you estimated the cost of equity capital using the regression analysis above?

A. Using the fundamental proposition that when a company is earning its cost of capital, the market to book ratio equals one, I estimate the return on equity would result in a 1.0 market to book ratio using the statistical analysis introduced above. To do this, I have used the database of market to book ratios and the forward returns on equity for the utility industry that derived the equation relating the market to book ratio and the return on equity. Using the market to book and return on equity equation, I estimated the return on equity that yields a market to book ratio of one.

Q. What is the cost of equity capital that results from the market to book value analysis?

A. Through estimating the relationship between return on equity and the market to book ratio, the cost of equity ranges between 6.48% and 7.60%. These numbers confirm that my cost of equity estimates presented above do not overstate the Ameren Companies' cost of equity capital.

2458 **Q. Is this cost of equity estimate plausible given that it is not much above the**
2459 **cost of debt?**

2460 A. Yes. Long-term debt carries inflation risk that is not present with equities. In
2461 addition, the personal tax rate on interest exceeds the tax rate on equity income.
2462 These factors combined with the very low non-diversifiable risk of Ameren mean
2463 that the cost of equity for utility companies may in fact be less than the cost of
2464 long-term debt. The cost of equity number resulting from the market to book
2465 ratio analysis of 6.48%-7.60% is certainly more plausible than the Ameren cost of
2466 equity estimated by Ms. McShane, of 11%-12.5%, which is more than 6% above
2467 the yield on treasury bonds -- a company with very little business risk.

2468

2469 **Q. What is the mechanical process you used to compute the cost of equity from**
2470 **the market to book ratio equation?**

2471 A. I first rearrange the regression equation above to derive a formula for the return
2472 on equity that depends on the market to book ratio. Next, I insert a market to
2473 book ratio of 1.0 into the equation to compute the return on equity that is
2474 consistent with a market to book ratio of one, which is the level that implies
2475 companies are earning their required return. The equation derived from the
2476 regression analysis is:

2477

2478
$$ROE = -.0131 + \text{Market to Book} \times .0779$$

2479

2480 If a market to book ratio of 1.0 is input into the above equation, the return on
2481 equity consistent with the cost of capital is 6.48%.

2482

2483 **Q. How have you computed the range in return on equity using the regression**
2484 **equation?**

2485 A. In order to have confidence that I am not over-estimating the cost of capital using
2486 this method, I have computed an alternative equation using confidence intervals

for the regression parameters. I adjusted the constant term and the return on equity coefficient by the standard error so as to be sure that the cost of equity is not overstated. Using the alternative coefficients, this equation produces the following equation:

$$\text{ROE} = -.0063 + \text{Market to Book} \times .0823$$

Plugging a market to book ratio of 1.0 in this equation yields a cost of capital of 7.60%.

VIII. ANALYSIS OF THE AMEREN COMPANIES' EQUITY COST
CALCULATIONS USING NUMBERS REPORTED BY INVESTMENT
BANKS

Q. Why is information used by investment banks in their valuation analyses useful to the Commission?

A. The incentives of analysts calculating equity costs must be considered in evaluating the cost of equity estimate. The Commission should carefully analyze information from investment banks because the banks do not have an incentive to bias their cost of capital estimates, as do consultants paid by utility companies, or, alas, even consumer advocates. In making analyses for clients, investment banks face pressure from competitors to keep abreast of new research and to innovate quickly in constructing accurate valuations. If the investment banks overstate the cost of equity in discounting cash flow, their valuations will be too low and mergers will not take place. If the cost of equity used in valuation is lower than the hurdle rates of investors, the valuations will be too high and overpayment for acquisitions could occur. In either of these situations, misestimating the true cost of capital will cost the investment bank future business from the client.

2518 **Q. Why do investment banks compute the weighted average cost of capital and**
2519 **the cost of equity capital in merger transactions?**

2520 A. The investment banks are hired to, among other things, make sure that the value
2521 of shares exchanged in a merger is fair to all concerned. The following statement
2522 by Morgan Stanley from the Exelon/PSEG merger prospectus demonstrates how
2523 valuations are derived from computing market-based discount rates:

2524
2525 The free cash flows and range of terminal values were then discounted to present
2526 values using a range of discount rates which were chosen by Morgan Stanley
2527 based upon an analysis of market discount rates applicable to comparable
2528 companies in the electric utility sector.⁵³

2529

2530 **Q. Summarize the weighted average cost of capital reported by investment**
2531 **banks in the recent Exelon/PSEG transaction?**

2532 A. In this transaction three of the investment banks presented estimates of weighted
2533 average cost of capital. JPMorgan and Lehman Brothers reported the cost of
2534 capital for Exelon while Morgan Stanley quoted numbers for ComEd and PECO.
2535 JPMorgan estimated that the weighted average cost of capital is between 5.25%
2536 and 5.75%; Lehman Brothers applied a discount rate (presumably derived from
2537 the weighted average cost of capital) of between 5.43% and 6.43% to Exelon free
2538 cash flows; Morgan Stanley used a weighted average cost of capital range from
2539 5.5% to 6.0% for ComEd and PECO free cash flows. The table below
2540 summarizes the three estimates:

2541

2542

2543

2544

2545

2546

Investment Bank	Cash Flow Discounted	Low Range	High Range
JPMorgan	Exelon	5.25%	5.75%
Lehman Brothers	Exelon	5.43%	6.43%
Morgan Stanley	ComEd and PECO	5.50%	6.00%

⁵³ Joint prospectus/proxy statement, May 27, 2005 p. 86.

2547 **Q. What was the cost of equity associated with the weighted average cost of**
2548 **capital numbers shown in the table above?**

2549 A. In the ComEd delivery service case I was unable to obtain the cost of equity
2550 estimates underlying these weighted average cost of capital numbers. However,
2551 one of the investment banks – Lehman Brothers – acknowledged in a letter to
2552 Exelon that the cost of equity capital is typically 300 basis points, or more, below
2553 the cost of capital presented by utility companies themselves in rate cases. The
2554 statement by Lehman Brothers confirms that utility companies traditionally
2555 overestimate the cost of equity capital to maintain high market to book ratios and
2556 to keep earning returns above the cost of equity capital. I determined that the
2557 implicit cost of equity in the Morgan Stanley WACC was 7.75%.

2558
2559
2560 **IX. ANALYSIS OF THE AMEREN COMPANIES' CAPITAL STRUCTURES**
2561

2562 **Q. How have you reviewed the Ameren Companies' proposed capital structures**
2563 **used to derive each companies' rate of return on rate base?**

2564 A. Yes. I have analyzed various issues associated with the Ameren Companies
2565 proposed capital structure, including goodwill, bond-rating targets and whether a
2566 hypothetical capital structure is appropriate for establishing capitalization ratios.
2567 My analysis demonstrates that the capital structure percentages proposed by the
2568 Ameren Companies to determine their proposed rates of return in this case are not
2569 appropriate. I also conclude that a hypothetical capital structure should be used
2570 driven by maintenance of a BBB bond rating similar to the proposal made
2571 Commission Staff witness Sheena Kight in the recent ComEd delivery services
2572 rate increase case.

2573
2574 **Q. Summarize the analytical concepts you have used in deriving an appropriate**
2575 **capital structure for the Ameren Companies'?**

2576 A. The following list describes the basis for my cost of capital proposal:
2577

- 2578 1. The capital structure for each company should correspond to the book
2579 value of assets related to providing delivery service.
- 2580 2. Cash flow ratios can be used to derive a reasonable capital structure
2581 for the Ameren Companies'. Cash flow ratios, driven by debt service
2582 requirements issued to support distribution investments, are the basis
2583 for evaluating credit ratings. The amount of debt outstanding on the
2584 balance sheet that determines interest expense and debt repayments
2585 rather than the resulting capitalization ratios drive credit ratings.
- 2586 3. The Commission can use a BBB bond rating to establish the target
2587 capital structure as suggested by Staff witness Kight in the recent
2588 ComEd delivery services case.

2589

2590 **Q. Can the Ameren Companies' support relatively high debt percentages on a**
2591 **prospective basis?**

2592 A. Yes. Ameren's low level of business risk allows it to maintain a relatively high
2593 debt to capital percentage. In a book written by two senior credit analysis
2594 professionals from Standard and Poor's in 2005, Blaise Ganguin and John
2595 Bilardello explain the relationship between business risk and financial leverage as
2596 follows:

2597
2598 "Another way of thinking about the relationship between business and
2599 financial risks would be to allow more aggressive credit ratios when the
2600 business risk is lower. Let's take the case of water utilities: In most cases,
2601 both supply and demand are generally fairly predictable, and once pipes
2602 are in the ground and maintained properly, the cost of running a water
2603 utility is very predictable. Hence cash flow predictability and volatility
2604 should be fairly good, allowing a higher level of financial risk."⁵⁴

2605

2606 Post-2007, the Ameren Companies' financial risk would be quite analogous to the
2607 water utility in the above quote and would be able to operate with high debt

⁵⁴ Ganguin, B. and Bilardello, J., 2005, Fundamentals of Corporate Credit Analysis, McGraw-Hill Books, p. 277.

2608 leverage. In my opinion the ICC should encourage distribution companies to take
2609 advantage of high debt capacity given their very low business risk.

2610

2611 **Q. Given the vagaries on the balance sheets for each company and the**
2612 **prospective credit risk, how have you computed an appropriate equity ratio**
2613 **for the company?**

2614 A. I begin with financial ratio guidelines published by Standard and Poor's for BBB
2615 companies and then I derive hypothetical capital structure through construction of
2616 prospective ratios using the recommended return on equity and the capital
2617 structure. I have applied the approach using a return on equity of 8% and
2618 financial statements. In this analysis the FFO/Interest coverage and the FFO/Debt
2619 coverage remain in the BBB range for each of the companies.

2620

2621 **Q. Why have you used a hypothetical capital structure for each of the**
2622 **companies?**

2623 A. The capital structure proposed by the company of each company is not equitable
2624 to ratepayers. The capital structure does not correspond to the rate base because
2625 of goodwill, inter-company notes and other issues. Further the equity injections
2626 prior to the rate case do not represent the least cost option from a ratepayer
2627 perspective. I will address each company separately in the following sections.

2628

2629 *a. AmerenCIPS's Capital Structure*

2630

2631 **Q. What is your recommendation with respect to an appropriate capital**
2632 **structure for AmerenCIPS for purposes of setting rates?**

2633 A. The most appropriate debt ratio for AmerenCIPS is 63% (long and short term
2634 debt) as shown in the table below. The input data for the cash flow ratios is
2635 computed from the 2005 CIPS financial statements. A 63% debt ratio would keep
2636 the cash flow ratios near the A standard.

2637

CIPS Capital Structure

Inputs

Debt to Capital	63.00%
Preferred to Capital	4.55%
Equity to Capital	32.45%

Utility Invested Capital	669.00
Cash flow Items (Average)	62.00
Non-Cash Percent	9.27%

Debt Cost	6.32%
Interest Cost	3.98%

Preferred Cost	6.00%
Dividend Rate	0.27%

Equity Cost	8.00%
Funds to Shareholders	2.596%

FFO to Interest

Funds from Operations	
Equity Funds	2.596%
Preferred Funds	0.27%
Non-Cash Items	9.268%
Interest Cost	3.979%
Total	16.115%

Interest	3.979%
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Coverage	4.05
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FFO to Debt

FFO to Debt	
Non-Cash Items	9.268%
Interest Cost	3.979%
Total	13.247%

Debt	63.000%
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Coverage	21.03%
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	CIPS Ratio	BBB Standard	A Standard
Funds From Operation/ Interest Coverage =	4.05	2.5-3.5X	3.5-4.2X
Funds From Operation/ Debt =	21.03%	12-20%	20-28%

b. AmerenCILCO's Capital Structure

Q. What is your recommendation with respect to an appropriate capital structure for AmerenCILCO?

A. The most appropriate long- and short-term debt ratio is also 63% as shown below. As with CIPS, the input data for the cash flow ratios is computed from the 2005 Central Illinois Light financial statements. A 63% debt ratio again would keep the cash flow ratios near the A standard.

CILCO Capital Structure

Inputs

Debt to Capital	63%
Preferred to Capital	10%
Equity to Capital	27%

Utility Invested Capital	864.00
Cash flow Items (Average)	80.50

Non-Cash Percent	9.32%
Debt Cost	4.75%
Interest Cost	2.99%
Preferred Cost	5.19%
Dividend Cost	0.52%

Equity Cost	8.0%
Funds to Shareholders	2.162%

FFO to Interest

Funds from Operations	
Equity Funds	2.162%
Preferred Funds	0.518%
Non-Cash Items	9.317%
Interest Cost	2.990%
Total	14.987%

Interest	2.990%
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Coverage	5.01
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FFO to Debt

FFO to Debt	
Non-Cash Items	9.317%
Interest Cost	2.990%
Total	12.307%

Debt	63.000%
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Coverage	19.53%
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	CILCO	BBB	A
	Ratio	Standard	Standard
Funds From Operation/ Interest Coverage =	5.01	2.5-3.5X	3.5-4.2X
Funds From Operation/ Debt =	19.53%	12-20%	20-28%

c. AmerenIP's Capital Structure

Q. What issues have you identified with respect to AmerenIP' proposed capital structure?

A. The most appropriate debt ratio for AmerenIP is 60% as shown below. As with the other companies, the input data for the cash flow ratios is computed from the 2005 financial statements. A somewhat lower debt ratio occurs for IP because of the cash flow to invested capital.

Illinois Power Capital Structure

Inputs		FFO to Interest	
Debt to Capital	60.00%	Funds from Operations	
Preferred to Capital	2.05%	Equity Funds	3.036%
Equity to Capital	37.95%	Preferred Funds	0.089%
		Non-Cash Items	5.428%
Utility Invested Capital	1,996.00	Interest Cost	2.433%
Cash flow Items (Average)	108.33	Total	10.986%
Non-Cash Percent	5.43%	Interest	2.433%
Debt Cost	4.06%		
Interest Cost	2.43%	Coverage	4.51
Preferred Cost	4.35%		
Dividend Cost	0.09%		
		FFO to Debt	
Equity Cost	8.0%	FFO to Debt	
Funds to Shareholders	3.036%	Non-Cash Items	5.428%
		Interest Cost	2.433%
		Total	7.861%
		Debt	60.000%
		Coverage	13.10%

	IP	BBB	A
	Ratio	Standard	Standard
Funds From Operation/ Interest Coverage =	4.51	2.5-3.5X	3.5-4.2X
Funds From Operation/ Debt =	13.10%	12-20%	20-28%

Q. Is this the end of your direct testimony?

A. Yes.